

LIVING IN THE
TWENTIETH
CENTURY

HARRY ELMER BARNES

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LIVING IN THE TWENTIETH CENTURY

Living in the Twentieth Century

A Consideration of
HOW WE GOT THIS WAY

By

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THE BOBBS-MERRILL COMPANY
PUBLISHERS INDIANAPOLIS

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FIRST EDITION

309
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Printed in the United States of America

PRESS OF
BRAUNWORTH & CO., INC.
BOOK MANUFACTURERS
BROOKLYN, N. Y.



TO

CHARLES AUSTIN BEARD

BRILLIANT HISTORIAN AND INTREPID PUBLICIST; THE
FIRST AMERICAN SCHOLAR THOROUGHLY TO APPRECIATE
THE SIGNIFICANCE OF THE INDUSTRIAL REVOLUTION
IN THE CREATION OF CONTEMPORARY CIVILIZATION.

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P R E F A C E

WHATEVER one's outlook upon life, one can scarcely deny that the last century has been the most striking and pregnant period in human history. Indeed it has already brought about more changes, or by implication is bound to bring about greater transformations, in human life and thought than were achieved between the so-called "dawn of history" and the middle of the nineteenth century. By the progressive, these changes are welcomed with enthusiasm as the prelude to a new and glorious age of prosperity, freedom and happiness, devoid of the older ignorance, scarcity, misery and solemnity. To the upholder of the old order, they are the most appalling challenge which he has ever been called upon to face. Therefore, all must take cognizance of, and prepare to reckon with, the cultural advances of the last century. We must take cultural inventory and come to realize that we are actually living in the twentieth century. We shall then be in a position to reflect upon what is to be done about it.

✓ The contrast between the civilization of a century ago and that of to-day is frequently mentioned by cultural historians and historically and philosophically inclined novelists, and is sometimes put into dramatic paragraphs, one of the best of which we quote in the body of this book. There are textbooks on modern European history which give at least some passing attention to the great cultural changes since Metternich. But, as far as the present writer is aware, there has been no direct and conscious effort to set forth in clear and popular form those transformations in our knowledge and material culture which separate our day from the civilization of Bentham, Jackson or Lincoln. Such is the sole motive of the present volume, and the materials have been selected for this purpose alone.

If the writer entertains any theories as to whether the sum total of the cultural transformations of the last century represents a gain for the human race, he has endeavored not to project them into his descriptive analysis. He has sought only to chronicle what has taken place—to indicate where we are, rather than where we may be going. It is his conviction that where we go from here will be determined very largely by how effectively and completely we recognize where we now are. Perhaps our greatest defect to-day is that responsible groups, whose mental life is that of the seventeenth century or earlier, are endeavoring to control and direct a twentieth-century civilization.

The author does not pretend to have uncovered any new and startling facts or theories. The only aspect of the enterprise which is in any sense novel is the conception as a whole and the resulting selection and interpretation of materials. Yet, what is a commonplace to the expert in the history of thought, science, technology, economic life or social institutions, is often little known or recognized by even the intelligent reading public. Moreover, the commonplaces of each department of contemporary learning often become striking and novel, even to experts, when assembled as the totality of contemporary cultural history. In the days of the expert, synthesis is rarely desired, to say nothing of being achieved. The writer would be the last to pretend that he has accomplished the difficult task of assembling and interpreting the ensemble of recent cultural changes, but he has at least made an honest effort in this direction, and the magnitude of his failure can only make more clear the necessity of attempting the task and render aid to those who may follow and execute the enterprise far more perfectly. Criticism, then, should be concerned chiefly with the worthiness of the historical vision which has prompted this undertaking and the wisdom in the selection of materials which has accompanied its execution.

The book is not only designed for the intelligent reading public, but also and especially for college and university

PREFACE

classes in modern history and historical sociology. It should prove particularly serviceable as a supplementary text in courses in modern history to supply the material on social and institutional history which is usually lacking in the conventional manuals. For the sociologists it is hoped that it may possess definite utility in providing the proper historical and genetic perspective wherewith to approach intelligently and competently the solution of contemporary social problems.

It goes without saying that the writer owes much as regards both the factual content and the organization of this book to many excellent volumes written on various aspects of the contents, and even more to his notable teachers who have covered these fields, such as James Harvey Robinson, J. T. Shotwell, F. H. Giddings, C. A. Beard, E. F. Gay, L. J. Henderson, George Sarton and others. Particularly cogent and helpful here were the perspective and dominating ideas developed in Professor Shotwell's course on the development of European civilization, and Professor Gay's course on the economic history of Europe in the nineteenth century. Many suggestions have come from his friend, Professor Melvin M. Knight, who is possessed of perhaps the most fertile and original mind among American students of history and social science. For an efficient reading of the proof-sheets of this volume the author is indebted to Miss Mildred Lintz and Mr. Robert W. Hankins. Professor Joseph Mayer of Tufts College has been kind enough to aid me by a critical reading of the proof-sheets of Chapter II.

HARRY ELMER BARNES.

Northampton, Mass.,
July 7, 1928.

LIVING IN THE TWENTIETH CENTURY

Living in the Twentieth Century

CHAPTER I

THE OLD RÉGIME: THE NINETEENTH CENTURY

I. THE THEME STATED

THE world is assuredly turning out to be a very different place from what it was conceived to be in the Middle Ages; human possibilities have expanded beyond belief, and man himself as well as his heaven and earth has little resemblance to the pictures of him which have been furnished by his moral guides. . . .

It is evident enough that our thinking and feelings do not change so readily as our circumstances, and cannot as yet keep pace with our knowledge at its present rate of increase. We continue to think of new things in old ways. Our sentiments teem with embarrassing anachronisms of which we are usually quite unconscious. . . . As yet our emotions have not caught up with our present situation and information. We have the great task before us of gradually replacing archaic aspirations, abhorrences, tastes and scruples by others which shall conform more closely to the actual facts as now understood and the actual conditions in which we live. Otherwise, our struggles toward the good life must perforce be feeble, hesitant, and ineffective, as indeed we find them to be. . . .

Since almost all things are as they are because they have been as they have been, their secret lies in the past. Our present problems cannot be understood by just looking them in the face. We have to ask how they arose—in trenchant slang, “How did we get that way?” . . . History is the sovereign solvent of prejudice and the necessary preliminary to readjustments and reforms. It is a sort of *aqua regia* which loosens up things and gives our thinking its necessary freedom. Nowadays all expert physicians in dealing with

physical and mental dislocations ask, "How did he get that way?" They are not content to take what they see without wondering how it came about. Our social, political, economic and educational diseases must be dealt with in the same way.¹

In the above words the most thoughtful historian of our generation has eloquently stated what we have made the underlying theme, the scope and the purpose of the present volume; namely, to set forth in straightforward fashion and logical sequence the outstanding developments which have launched us upon the great adventure of the twentieth century. It may be true that "we don't know where we are going," but it is not necessary for us to remain ignorant of "how we got this way." And perhaps it is not too much to hope that a knowledge of how we have arrived at the present state of affairs may suggest ways out of contemporary perplexities. At least, it will aid notably in lifting the "dead-hand," or the cult of the past, from the backs of those who are helping to make this earth a more decent place as the habitat of *homo sapiens*.

Perhaps the most essential of all the elements in the mental equipment of a civilized inhabitant of the United States at the opening of the second quarter of the twentieth century, is an accurate and vivid comprehension of the enormous revolution of intellectual perspective rendered necessary by the progress of scientific knowledge and technological achievements during approximately the last half-century. Enormous as such cultural changes have been in scope and implications, their significance is scarcely suspected by many relatively well-educated persons. We all realize to-day that we ride in automobiles and subways instead of stage-coaches, and that we have thermostatically-controlled heating-plants rather than ineffective antique fireplaces, but we generally fail to recognize that, accompanying these alterations in ma-

¹ James Harvey Robinson, in *Harper's Magazine*, August, 1926.

terial civilization, there must come equal transformations in our whole intellectual outlook on such things as the cosmos, God, the world, man and the objectives of human life.

The intellectual perspective of a thoroughly contemporary man, such as that pictured in Wells' *World of William Clissold*, or represented by the views of such recent specimens as Mr. Wells himself, Anatole France, Bertrand Russell, John Dewey, Clarence Darrow, James Harvey Robinson, W. I. Thomas, George Dorsey, Henshaw Ward or Thorstein Veblen, departs more widely from the intellectual equipment and outlook of Henry Ward Beecher than that of Beecher did from the knowledge and view-points of the age of St. Augustine. It is, indeed, difficult for us to realize how little of the cultural heritage with which our own generation started will stand the test of the recently accumulated scientific knowledge and the necessarily altered cosmic perspective.

We shall endeavor in this opening chapter briefly to summarize the social environment, outlook and problems which characterized the lives of even the better educated classes a generation or two ago. This will serve as the basis for a better appreciation of what it really means to live in the twentieth century, with all its novelties and complexities which we shall attempt to describe much too briefly in the remainder of the book. It will, of course, be taken for granted that this description of the "Old Régime" in a broad cultural and intellectual sense is intended merely to set forth a generally accurate impression of the situation. It is impossible to draw any large generalizations about the matter without in many cases violating literal exactness with respect to chronological detail and geographic areas of cultural development. There were some advanced intellects who anticipated much of the contemporary outlook a generation ago, even though their point of view rested more upon brilliant intuition than upon substantial and demonstrable facts. Likewise, some of the more advanced economic areas had already left behind the almost exclusively agrarian life by the middle of

the last century. It is even more apparent that the intellectual life of a majority of Americans and Europeans to-day embraces much of the same body of tradition which was espoused by our ancestors of a half-century back. It is equally obvious that many peoples have been very slightly affected by the great scientific and technological changes of our generation. Yet we submit that this chapter presents a substantially correct picture of the state of thought and civilization in the last half of the nineteenth century, which is the background that we require as the basis for portraying our ever greater departure from this order of things.

II. THE ACCEPTED COSMOLOGY

As man's explanation of the origins of his universe and himself there still persisted a half-century ago the full acceptance of the doctrine of a special and cataclysmic creation some six thousand years back. Not everybody was as specific as Bishop Lightfoot, who held that this great creative event took place between Sunday, October 23 and Saturday, October 29, 4004 B. C., but there was very general agreement that this crucial period of creative endeavor was relatively recent and occupied God's attention during only the working hours of a single human week. Of course, some, who adopted the ingenious exegesis deemed essential to harmonize the dawning comprehension of the evolutionary hypothesis with the doctrine of Genesis, interpreted each of these six creative days as a thousand years. The majority, however, accepted quite comfortably the conventional notion that the creative week was one of seven days of twenty-four hours each, God having invented these convenient chronological units prior to the appearance of man in the world.

The creation hypothesis not only rested upon the assumption of the recency and brevity of the creative period, but also upon that of the uniqueness and finality of the original creation. There was little or no conception of growth and

development, there having been nothing but a chaotic void before the great week of creation and no marked change in man and his surrounding flora and fauna after God rested from his impressive endeavors on that first glorious Saturday of divine contemplation, contentment and relaxation.

All of these assumptions, of course, involved a very definite feeling of finality, exactness and certainty with respect to how everything had come about. Geology, botany, zoology and anthropology could be little more than static and conventional bodies of descriptive knowledge, auxiliary to theology and portraying once and for all the wonders which God had wrought somewhere in the salubrious climate of western Asia some six millennia ago. The eminent authority on Hebrew history and language, Doctor Charles Prosper Fagnani, has admirably summarized in the following manner the essentials of the epic of creation as handed down from the primitive Hebrews to the Tennessee legislature of 1925, many of the members of which actually believed that God had dictated this revelation to Moses in the faultless English prose of the King James version of the Bible:²

The controversy between the Fundamentalists and the Modernists turns largely upon their opposing views of the first eleven chapters of Genesis, especially the first three.

They ask us to believe: that what is therein contained is inspired of God, and therefore absolutely true and historically trustworthy.

That if we do not accept these stories literally, we cannot be Christians, cannot join the Church, and moreover run the risk of everlasting condemnation in Hell.

That the results of modern science in almost every department, notably the universally accepted theories of evolution, are to be rejected, because they conflict with the Bible.

Let us consider some of these things which are claimed to be divinely inspired and therefore sacrosanct, to see how far these claims are justified by the facts. We are told:

² C. P. Fagnani, *The Beginnings of History According to the Jews*, pp. 11-16.

That the Universe all of it—planets, suns, stars, nebulae—were created in six days.

That this work was all completed only some six thousand years ago.

That God rested and was refreshed after his labors, on the seventh day.

That God spoke the Hebrew language and gave names in that tongue to the light, the darkness, the earth, the seas, etc.

That all the species of animals were created separately and exist to this day unchanged.

That the sky is a solid vault; for that is what the word firmament means.

That the earth brought forth the animals.

That God is like a man with head, arms, legs, etc.

That there was a tree which gave universal knowledge, and another that imparted immortal life.

That God tried at first to find a mate for the man in one of the female animals.

That failing in this, he took a rib from the man and made a woman of it.

That God promenaded in a garden in the cool of the day.

That a serpent engaged in conversation with the woman and led her into temptation.

That the woman ate an apple and gave some to the man, and God cursed them for it.

That God made coats of skin and put them on the guilty pair.

That men, before the Flood, lived for hundreds of years.

That angels had intercourse with the females of mankind. These, as a result, gave birth to demi-gods who corrupted the human race, so that God was obliged to send a deluge to destroy them all.

That only eight human beings were saved in a boat with a single pair of each species of animals.

That the waters rose forty-five feet above the top of the highest mountain in the world.

That God came down in person to inspect a tower.

All this, and much more of the same kind, the Fundamentalists believe as firmly as they believe in the multiplication table; and they demand that we shall believe such things or be excommunicated.

For the sake of these tales, they turn their backs on modern science and forbid that it shall be taught in the Public Schools.

III. THE GEOCENTRIC PSYCHOSIS

The special creation hypothesis of necessity produced a very narrowly circumscribed geocentric outlook. In the accepted story of creation our earth was presented as not only the center of the universe but also as the only vitally important object in the cosmic realms. The heavenly bodies were looked upon as relatively insignificant, not so very distant from the earth, and designed to promote in differing degrees and by diverse methods the edification and welfare of mankind. The assumptions and implications of the geocentric psychosis were both astronomical and theological. The geocentric outlook made it impossible for man to realize in any sense the magnitude, complexity and dynamic nature of the universe of universes, which to-day staggers the imagination of even the tyro in astrophysics. Theologically speaking, this view of things made it quite reasonable to suppose that the earth was both the most notable product of God's creative ingenuity and the absorbing center of divine solicitude. It did not seem in any sense incredible that God could from time to time have resided in person upon our planet, or that He could have been so much concerned about the welfare of its inhabitants as to sacrifice His "only begotten Son" for the purpose of securing their salvation.

The justification of creation which was involved in the cosmology of the faithful was the cosmic dualism that the later Jews and the Christians had taken over from the Persian religions. This held that the purpose of God in creating the material universe was to provide a convenient arena in which the principles of good and evil could have at each other and carry on the conflict to the bitter end. Ultimately, good would triumph over evil; the faithful would be re-

warded by an eternal life of incredible bliss; and the wicked would be miserably consumed by fire. In the early Persian lore this incineration of the evil ones was held to be accomplished with expedition. The Christians, however, increased the incentive to right living by holding that a sort of spiritual asbestos entered in as an integral constituent of lost souls. Hence, their consumption in fire and brimstone would go on for ever, to the indescribable pain and anguish of these lost ones and the edification of the saved. This rationalization of the universal puzzle has constituted the only widely accepted interpretation of the purpose of God in creating the material universe, and its complete demolition by modern natural science, critical thought and cultural history has been one of the most disconcerting aspects of the great disillusionment so characteristic of twentieth-century culture.

IV. HOMO SAPIENS IN FUNDAMENTALIST ANTHROPOLOGY

The accepted view of the nature of man, which formed an integral part of the accepted Christian Epic, well presented that amazing logical inconsistency so characteristic of much theological reasoning. Man was held to be at once the "Lord of all Creation" and a "vile worm of the dust." Only "a little lower than the angels," he was at the same time so base that he could do no good thing on his own account and might expect salvation only through the in-dwelling grace of God. Originally perfect and free from sin at the very pinnacle of the hierarchy of creation, his insatiable gastronomic curiosity and his avidity in the pomological realm had led to his permanent debasement, with the multifarious varied and degrading sins, weaknesses and miseries to which the flesh is subject.

The most important point, of course, is that man was viewed from a theological standpoint rather than from the vantage-point of biology, physiology, psychology and sociology. The key to his behavior was sought in the traits assigned to him in Holy Writ, in conformity with the will of

God, and not in the nature of his biological structure, his glandular orchestration, his social conditioning or his institutional surroundings. Theology, rather than biology, physiology, anthropology and psychology, was believed to provide the proper illumination with respect to the nature of man. Above all, man was not admitted to be a member of the animal kingdom, but was looked upon rather as separated from it very sharply in every aspect of his nature and his every legitimate desire. Comparative biology, anthropology, psychology were quite unthinkable. Indeed, the most potent source of adamant resistance to the evolutionary hypothesis was the revulsion of feeling against the abhorrent suggestion that man was simply the dominant animal on this particular planet in the present geological age.

V. THE RATIONALE OF EXISTENCE

The approved notions of the purpose of life and of the nature of the good life flowed naturally out of the accepted cosmology and its attendant theology. Life here on this earth was not looked upon as of any consequence in itself. It was significant only in so far as our earthly conduct affected our eternal destinies. The function of man was not in any sense to make himself as happy and efficient as possible in the light of his physiological equipment and his social and cultural surroundings. The supreme, indeed almost the sole, objective of human life was to insure the salvation of a mysterious entity known as the human soul in that spiritual home which was alleged to be in store for those who conducted themselves according to the prescribed behavior approved in Holy Writ. Spiritual salvation, then, rather than human happiness and efficiency, was looked upon as the real purpose for which man was placed upon this planet. Earthly happiness was, in fact, regarded as fundamentally antagonistic to eternal salvation. The mundanely happy man was likely to be absorbed in, and content with, the things of "the world, the flesh and the Devil" and, hence, either careless

or contemptuous of those spiritual values whose quest alone could lead the humble and miserable sinner safely into eternity.

VI. GUIDANCE TO THE GOOD LIFE

It will be readily apparent that with this background of cosmology, anthropology and theology the approved source of guidance for human life was not to be discovered in the sciences of nature and of man or in esthetics, but rather in the Hebrew Bible, a supposedly sacred book which revealed God's wishes and directions with respect to that life which merited divine approval and would achieve eternal salvation. It was unthinkable that one should assume to discover directions as to desirable behavior in a knowledge of the nature and requirements of man as an animal sharing a group life and a common cultural heritage with other animals like unto himself. In other words, nothing which man had discovered through centuries of painful investigation of human nature and social institutions could for a moment be compared as to authority or cogency with the divine dispensation embodied in the Bible. It was of no import as to how archaic these Scriptural precepts might appear in the light of the most fundamental and the best established findings of contemporary science. A person who would have suggested that the writings of Haeckel, Huxley and William James might legitimately be matched against those assigned to Moses or St. Paul would have been regarded by even those of liberal inclinations a generation ago in much the same light as the peasants of Tennessee now look upon the estimable Mr. Darrow.

VII. THE METAPHYSICS AND PHYSIOLOGY OF FREE WILL

It was but natural that the accepted theory of human conduct should have rested upon metaphysical and theological

rather than upon biological, psychological and sociological foundations. There was no appreciation whatever of the fact that human conduct is the resultant of a certain definite type of biological or neurological heredity, conditioned by a vast variety of social stimuli playing upon the individual in the whole period which separates the services of the obstetrician from the solemn intervention of the mortician.

The almost universally adopted conception was that of man as a free moral agent. It was held that man was perfectly capable of choosing any type of behavior, irrespective of the peculiar circumstances of his biological background and his social environment. Entirely independent of his ancestry and training, it was held that any person was at any time perfectly free to decide, for example, as to whether on a Sunday night he would enter a church with an air of piety and penitence or remain outside and cast stones at the structure in derision. Human behavior was regarded as the ever-varying and somewhat unpredictable outcome of the perpetual struggle between the human conscience, which was the custodian of God's will in the bosom of the individual, and the subtle temptations of the Devil. The conscience told man what he ought to do; the Devil, what he wanted to do. The individual was free, however, to follow his conscience and to repel the subtle seductions of the Devil.

VIII. THE BACKWARD STATE OF NATURAL SCIENCE

In spite of all those advances in natural science from the period of Copernicus to the age of Darwin and Helmholtz, many of the more striking phases of contemporary science were absent or but in their initial stages of development. In astrophysics the doctrines of relativity of Einstein had not been launched, nor were the extent and complexity of the cosmos as demonstrable or well recognized as they have become since the achievements of Michelson and others in detecting heavenly bodies and determining their size, speed and

paths of motion. There was little effort on the part of astronomers to indicate the significance of their discoveries in relation to the prevailing theories of God, man and the world. Physics still awaited not only much further patient systematic work but also some of the most striking discoveries of recent times: the electro-magnetic theory of heat, light, sound and electricity, the mathematical synthesis of the physical universe, radio-activity, and our present conceptions of the structure and activity of the atom. With Willard Gibbs and others, advanced physical chemistry, resting upon an exploitation of the more abstruse phases of higher mathematics, was only beginning its all important but too little known contributions to both physical science and technology. While some leading principles of synthetic organic chemistry had been discovered and expounded, they were not widely employed in a practical fashion until the twentieth century.

The evolutionary theory in biology was by no means so firmly established as it became after the work of Darwin had been supplemented by that of Mendel, DeVries and others, who explained many hitherto obscure or mysterious processes of physical heredity. In physiology little was known of that extremely important chapter of the subject dealing with physiological chemistry and the operation of the glands of internal secretion. We scarcely recognized the truth of the assertion that life, even human life, is but a form of bio-chemical behavior. In psychology we still lacked the later developments in physiology and neurology, the true biological emphasis in behaviorism, the epoch-making discoveries of modern psychiatry, the perfection of laboratory methods and the development of certain phases of the subject into a truly naturalistic science. We had not yet attained anything like the present organization of scientific research or provided the richly endowed institutions devoted solely to the investigation of the wonders and mysteries of the physical universe and organic life. And while there is still a regrettable gulf between the popular mind and the knowledge

and intellectual attitudes of the well-informed scientist, still this discrepancy was incomparably greater a generation ago. In the world of science some fifty years ago the foundations had just been laid for that unprecedented efflorescence of science and resulting technological revolution which constitute the outstanding developments of the last half-century.

IX. LIMITED DEVELOPMENT OF MODERN INDUSTRIALISM

As with natural science, so with applied science or technology; while the Industrial Revolution was well under way in England, France, Germany and the eastern United States some fifty years ago, yet such progress as had been made was merely preparatory to the sweeping transformation of our material culture which has been witnessed by our own generation. Aside from the textile industry, the boot and shoe industry, and the iron and steel industries in certain great urban centers, industry was still carried on for the most part by handicraft methods, not different in outline and principle from those which had existed at the close of the stone ages. Our modern methods of transportation by means of railroads, steamships, motor-trucks and aeroplanes were either unknown or far from their present-day perfection. Furthermore, the contemporary devices for communicating information, such as the telephone, telegraph, wireless telegraph and radio, the cheap daily newspaper and the free and prompt delivery of mail in city and country had not yet come into existence in their present forms or their contemporary universality of adoption. Many would, without careful thought, more or less tend to regard the age of Abraham Lincoln as identical in culture with our own. Professor A. M. Schlesinger has shown, however, in a paraphrase of a striking passage by Professor E. P. Cubberly, how remote, from the standpoint of material civilization, the period of the Civil War is from our own:³

³ A. M. Schlesinger, *New Viewpoints in American History*, pp. 246-48.

Medieval American history was brought to a close by two epochal events. The first of these, the victory of the federal government in the Civil War, discredited forever the doctrine of state sovereignty and destroyed the anachronism of slavery. The other event was, in its everlasting effects, more significant than the war itself, although, strangely enough, the historians of the period have little to say about it. This was the great economic revolution which swept through the nation at high tide from about 1860 to 1880 and willy nilly projected America into Modern Times.

Life in the United States before the Civil War had a peculiar static quality so far as the essentials of living were concerned. There were no great cities in our modern sense, and fewer than a half-dozen millionaires. People in general lived comfortably and wastefully. There was virtual equality of material possessions and always an opportunity for the man who could not make a livelihood in the crowded portions of the country to make a clean start on the frontier. An old letter recently discovered in the files of the United States Patent Office shows that in 1833 the head of that department wished to resign because he felt that the limit of human invention had been reached and there would be no further need of his services.

To be sure, mute forces were working beneath the surface of American society that were prophetic of future changes; but these were little heeded or understood at the time. There had occurred an industrial revolution in England in the latter part of the eighteenth century, the significance of which appeared in the introduction of the factory system into that country and the profoundly changed relations in industry and society that resulted. Under the influence of the embargo and the tariffs of 1816 and 1824, manufacturing had begun to develop in certain districts of the seaboard states of the North; but the country as a whole was untouched by the factory system, being predominantly agricultural in its interests and modes of living. Nearly four-fifths of the people continued to live on the farm.

In most respects the daily routine of life with which Webster and Lincoln were familiar was the same as that of George Washington and Benjamin Franklin; and there was in no sense the profound contrast that we have between the times of Lincoln and those we live in to-day. As Professor Cubberly has pointed out, if Lincoln were to return now and

walk about Washington, he would be surprised and bewildered by the things he would see. Buildings more than three or four stories high would be new. The plate-glass show windows of the stores, the electric street-lighting, the moving-picture theaters, the electric elevators in the buildings and especially the big department stores would be things in his day unknown. The smooth-paved streets and cement sidewalks would be new to him. The fast-moving electric street-cars and motor vehicles would fill him with wonder. Even a boy on a bicycle would be a curiosity. Entering the White House, someone would have to explain to him such commonplaces of modern life as sanitary plumbing, steam heating, friction matches, telephones, electric lights, the Victrola, and even the fountain pen. In Lincoln's day, plumbing was in its beginning, coal-oil lamps and gas-jets were just coming into use, and the steel pen had only recently superseded the quill pen. The steel rail, the steel bridge, high-powered locomotives, refrigerator cars, artificial ice, the cream separator, the twine binder, the caterpillar tractor, money orders, the parcels post, rural free delivery, the cable, the wireless, gasoline engines, repeating rifles, dynamite, submarines, airplanes—these and hundreds of other inventions now in common use were all alike unknown.

While capitalism had made enormous advances since the days of the Fuggers of the late Middle Ages, the profit motive had not yet become so absolute as it was at the outset of the twentieth century. There was still a very notable vestige of the service motive in industrial enterprise and a considerable adaptation of manufacturing industry to actual human needs. With the exception of certain well industrialized areas, life still rested chiefly upon an agrarian basis, as it had since Neolithic times.

X. THE STABILITY, SIMPLICITY AND ISOLATION OF CULTURE

As a result of these primitive economic conditions and other leading aspects of the age, society was characterized by general cultural stability and isolation. The rapid changes in the mode of life with which we are familiar were foreign

to that period. Life went on much as it had in earlier generations. The same general run of industries was carried on by the time-honored processes which had remained unchanged for centuries. There were few changes in, or challenges to, the dominant social institutions. Custom, habit and tradition reigned supreme with only faint protests. Life was far more simple in its nature than it has become since the days of the telephone, radio, daily newspaper, transcontinental trains, ocean liners, elevated railways, subways, movies, automobiles, aeroplanes and a hundred other aspects of modern devices for increasing comfort, satisfaction or excitement. The outlook and interests of the average man were still circumscribed by the confines of the local neighborhood, though even the first half of the nineteenth century witnessed a remarkable development of the national spirit. The modern newspaper had not been adequately developed or its circulation sufficiently popularized to make it possible for the average citizen to familiarize himself from day to day with world events as he can at the present time. In general, the last half of the nineteenth century may be described as one in which the psychic orientation was gradually being transformed from the provincialism and barbarism of the local community or neighborhood into the larger scale and much more dangerous provincialism and savagery of the unrestrained national-state system.

XI. POLITICAL PROBLEMS AND METHODS

The dominating political conditions grew naturally out of the state of industry and society. While centralized government had made great strides in the century before 1875, yet, particularly in the United States, the more vital aspects and functions of government were those which were executed by the local political agencies. This was the age in which democracy in both theory and practise reached its highest development. Its assumptions to the effect that all men were

more or less equally capable of exercising the suffrage and discharging the duties of public office and that there would be a large amount of popular interest in political matters, once the vote was given to all the people, were more rational and plausible in those days than they are in our own period. Political problems were, for the most part, of a simple and local type, involving such things as repairing the local pound, putting new planks on a bridge, hanging a horse thief, marrying an expectant couple or adding an extra box or two in the local post-office. Almost any representative of *homo sapiens*, able to keep out of the local jail, almshouse or "idiot asylum," could be safely entrusted with such rudimentary political functions as these. At the same time, the practical, personal and first-hand nature of such functions, and their intimate relation to the every-day life of the people, served to arouse a vivid personal interest in political affairs, such as can scarcely be stimulated by such present-day political tasks and achievements as the Dawes Plan, the Federal Reserve Act, or the latest scheme for shielding corporate interests or favoring a special group of western farmers.

The international aspects of politics were as primitive as the domestic phases of government. The outlook was chiefly local or national. Among the majority of even the more advanced thinkers and statesmen of the period the national state was viewed as the final and most perfect product of political evolution. The assumption of the absolute sovereignty of the national political entity was one of the most precious and impregnable dogmas of the era following the American Civil War. The dominating policies of the leading modern states, such as the achievement of unification in Italy and Germany, the "splendid isolation" of England, and the Monroe Doctrine in the United States, were all based upon overwhelmingly nationalistic obsessions.

While a few dreamers from the days of Dante onward had urged the necessity of an international point of view and had argued for the protective and cultural value of international

organization, nevertheless, such views were looked upon as absurd by most of the "hard-headed" statesmen of the age, as well as by the average humble householder of the time, should he have happened to hear of them. Even though the League of Nations was defeated in the United States in 1919 and 1920, yet the project received a much more sympathetic response than would have been the case fifty years earlier. It would have been laughed out of court without a struggle in the days of President Grant. Political life a couple of generations back was thus characterized by a predominance of local problems, by a simplicity of political issues and methods, by the assumption of the desirability and practicability of democracy, and by a strongly nationalistic outlook upon international affairs.

XII. EDUCATIONAL METHODS AND IDEALS

Educational methods and practises were also very far removed from thoroughly contemporary ideals and aspirations. The basic element in education, carried on more at home than in the public schools, consisted in inculcating those moral principles which were held to have been set down by God in Holy Writ for the guidance of His children here upon earth. While religious instruction of a specific character was gradually being abandoned in state institutions, nevertheless, it remained a wide-spread and prominent practise in many church and private schools, colleges and universities. In the average American college fifty years ago the course on "Christian Evidences" was looked upon as the crowning apex of the curriculum and was usually given, in order to assure appropriate dignity, solemnity and authority, by the president of the college himself. The subjects studied were a strange mosaic: an archaic heritage transmitted from earlier ages and engrafted upon the rudiments of learning, consisting of reading, writing and arithmetic.

There was a heavy constituent element of primitive ideals

in the way of the conventional instruction in religion, philosophy and ethics, the two latter subjects still remaining, even in the hands of a Royce, primarily adjuncts of theology rather than efforts to understand and interpret the newer views of man and the world in relation to human life. A Dewey is shocking enough in a "godless" Columbia University of the second quarter of the twentieth century, but he would have been quite unthinkable in Williams College under Mark Hopkins—where Stanley Hall in the 'sixties had to seek refuge in a cow-stable to read Darwin by light of a barn lantern! Along with this primitive religious strain there continued to be a good deal of the classical and medieval interest in rhetoric as a method of preparing one for public life in an age in which argumentation and forensic skill were still deemed of greater importance for politics than a scientific knowledge of those facts relevant to political life. The humanistic obsession with the classics still prevailed, though the older emphasis upon the virtues of classical literature was gradually being displaced by insistence upon the disciplinary value of classical syntax. The dominating psychology of education was the punitive or penitential conception that only those things were of great value which were distasteful to the student. Character and will-power were to be secured through assigning educational tasks, as far as possible unpleasant, and then insisting upon rigorous execution of such tasks.

Natural science was but slowly making its way into institutions of learning in the face of the determined opposition of the older theological, moralistic and humanistic studies. The social sciences were much less developed than natural sciences and even less popular and generally adopted in institutions of learning. The practical and somewhat democratic conception that the function of education consists chiefly in preparing one for the actual problems of life under existing conditions and in suggesting desirable alterations in the present social order found little general acceptance. Edu-

cation still remained for the most part an opportunity for the privileged classes, and the nature of the instruction imparted was consciously intended to set one apart from the practical activities of every-day life. Education was, to use Professor Kallen's description, a distraction from, rather than a preparation for, life.

Though some progress had been made in the way of free, compulsory, state-supported education in the elementary schools, and though colleges and universities were becoming more numerous and better endowed, yet fifty years ago there was nothing like the present universality of public education of children in the elementary and secondary schools or the present rush which we are witnessing toward the incredibly numerous and greatly overpopulated contemporary colleges. Education then was still predominantly designed to inculcate and perpetuate the Christian Epic and to prepare a specially privileged class for a life apart from the turmoil of every-day existence.

XIII. THE INTELLECTUAL COCK-SURENESS OF THE LAST GENERATION

There was in human thinking at this time a general air of assurance, adequacy and certainty. It was held that we had rather specific, satisfactory and enduring knowledge concerning the nature of man and his destiny, as well as of the world of which he was the leading inhabitant. It was believed that we had very definite information concerning the origin of the cosmos, the extent of the universe, the time during which the earth and the heavenly bodies would continue to exist, and the approximate date of the end of the earth and our universe. It was held with equal assurance that we knew exactly why and when God had created man, the purpose for which man was placed upon the earth and the manner in which he might fulfill the will of God. In other words, the general philosophy and outlook of the aver-

age man fifty years ago was one which was characterized as much by finality and self-assurance as were the simple cosmology and customary codes of primitive peoples.

There has been much discussion of the psychological contrast between primitive man and modern man. It is more or less generally agreed that the dominating characteristics of primitive thought were an all-pervading belief in supernaturalism, an absence of high-developed logical thinking, and paucity of concrete scientific knowledge. If this be true, then it will be readily conceded that the great majority of Americans were primitively minded a couple of generations back, as indeed many remain to the present day.

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CHAPTER II

SCIENTIFIC PROGRESS AND ITS INTELLECTUAL IMPLICATIONS

I. CHANGES IN SCIENTIFIC PROBLEMS AND METHODS

IN THE preceding chapter we made an effort briefly to summarize the nature of the "Old Régime" of thought and society which was still prevailing in most areas when the parents of the present generation of scholars and workers were in the prime of life. We shall now proceed to present an equally brief characterization of the alterations of outlook upon some major problems of existence which have been forced by the scientific advances of the last fifty years. In succeeding chapters we shall set forth the account of how science and technology have cooperated to produce a new world of material culture and to bring about a fundamental transformation in some of the outstanding issues and institutions of the modern age.

We may first make at least passing mention of some of the more significant aspects of scientific advance in approximately the last fifty years. In doing so we shall not make any pretense to a history of contemporary science, which would require, even granting that one were capable of describing it, more space than that at our disposal in the entire present volume. We shall do no more than to indicate the general character of what has been going on in the major fields of science.

One of the most striking aspects of contemporary scientific progress is the growing breadth and complexity of modern science and the rapidity of advance in the various fields. In 1700 a versatile scientist like Leibnitz or Newton could be a master of the outstanding facts of all natural science.

In 1875 an able scholar might still have under control the complete development of a single major branch of science such as physics or chemistry. To-day it is rare that one human mind can keep abreast of the discoveries made in a single subdivision of physics or chemistry. One of the most brilliant of contemporary mathematical physicists committed suicide a few years ago because his subject was developing more rapidly than he could follow it. This means that natural science must become ever more definitely a cooperative enterprise as between nations, departments of science, and those engaged in work in each special field of scientific endeavor.

Another important point to be noted is the great improvement in the organization and support of scientific research. Early modern natural science arose for the most part outside the universities in cooperative societies of amateurs of differing degrees of competence and training. By the second half of the nineteenth century natural science had been accorded an established place in the institutions of higher learning. Most of the eminent scientists of that period were university professors who had to interrupt their research by the burdens of teaching. In the last half-century more extensive provision has progressively been made for endowed foundations promoting scientific research with ample facilities and with the research students free from all responsibility save that of penetrating more accurately and intensively into the mysteries of nature.

A third novel aspect of contemporary scientific progress has been the rapidity with which discoveries in natural science have been taken up and exploited in the service of technology and industry. A century or so ago scientific discoveries, which have since proved of untold significance for technology and industry, were left untouched for generations by those interested in the advance of material culture or in the growth of economic enterprise. To-day, the findings of the scientists are eagerly awaited and immediately

snatched up and applied to the appropriate field of medicine, technology or industry. Indeed, some of the best scientific research of our day is subsidized by great industrial concerns in laboratories which they support in connection with their factories, mines or transportation lines. The linkage between science, technology, industry and art has become ever more direct, sensitive and effective.

II. SOME PHASES OF THE DEVELOPMENT OF CONTEMPORARY SCIENCE

In the field of mathematics the most important recent developments of a practical sort have been the perfection of the higher equations and the application of higher mathematics to the more difficult phases of physics and physical chemistry. This mathematical synthesis of physical nature by Clerk Maxwell, Willard Gibbs, Albert Einstein and others is unquestionably the most impressive and romantic achievement of the human intellect and probably the one which will ultimately have the largest significance for the future of the human race. More abstruse and absorbing as phases of mathematical theory have been such research exercises as those dealing with non-Euclidean geometry, imaginary numbers and the fourth dimension. But the most important aspect of contemporary mathematics is not the advances in this subject itself but the exploitation of mathematics in the service of the physical sciences, a development the implications of which Sinclair Lewis attempted to popularize in *Arrowsmith*.

In astrophysics perhaps the most sensational advance has been Einstein's modification of the Newtonian conception of gravitation and the path of light and heavenly bodies in what is known as the doctrine of *relativity*. Fundamentally, aside from its application to the reconstruction of astrophysical concepts in relation to light and planetary motion, the doctrine of relativity comes down to the demonstration that the

physical ultimate is energy, that matter is a manifestation of energy, and that gravitation is but a property of matter. It also breaks down the distinction between time and space. Better instruments, such as the spectroscope and the interferometer, have also enabled us to discover the chemical constitution of the heavenly bodies, to measure the speed of light, to compute the size of the more distant heavenly bodies and to detect the existence of stars hitherto not visible to the human eye through the most powerful telescopes. Here we owe the most to Wollaston, Fraunhofer, Bunsen and Michelson. Much excitement was generated a few years back through the measurement of the giant star Betelgeuse by means of the interferometer, but Professor E. E. Slosson has called attention in the following passage to the subsequent measurement of another star nearly twice the size of Betelgeuse:¹

Far over in the Southern skies, upon summer evenings, one's attention is attracted by a fiery red star in the midst of a brilliant and peculiarly shaped group of stars that bears a resemblance to a boy's kite with a long streaming tail dipping down to the southern horizon.

This is the constellation of Scorpio. The Scorpion is the brightest of all the zodiacal groups of stars through which the sun passes in its yearly circuit of the heavens, and the brilliant red star which marks the heart of the Scorpion is Antares, which means Rival of Ares (the Greek for Mars).

It bears a very close resemblance to Mars in color and in brightness, at the times when that planet is far from the earth and its splendor is somewhat dimmed. There are times too when the ruddy planet passes very close to Antares, and if Mars is at the time in the far part of its orbit the likeness of these two objects in color and brightness is very striking.

How astonished the ancients who named this star Antares would have been, however, had they known that the glorious Mars would be but an infinitesimal speck on the face of the

¹ From *Keeping Up with Science*, by Edwin L. Slosson, pp. 103-07. Copyright, 1924, by Harcourt, Brace and Company, Inc.

mighty super-giant sun, Antares, in comparison with which even our own sun is a dwarf.

The results of measurements of the diameters of a number of giant stars with the interferometer show that Antares is a giant among giants and has the greatest diameter of any star yet measured, surpassing in size even the amplitudinous Betelgeuse in Orion. The diameter of Betelgeuse is about 240,000,000 miles. The diameter of Antares is about 400,000,000 miles. To this "rival" of Mars—that tiny planet about 4,000 miles in diameter in which we take such a great interest—let us compare rather the orbit of the planet than the planet itself. The diameter of the orbit of Mars is about 280,000,000 miles and if we placed Antares at the center of the solar system in place of the sun its surface would be some sixty million miles beyond the orbit of Mars and beneath its surface would lie Mercury, Venus, the Earth-Moon system, Mars, and many of the asteroids.

The distance of Antares from the earth is about 360 light-years. Let us do a little computing in regard to this. A light-year is 63,000 times the distance from the earth to the sun in round numbers, and round numbers will do for this problem. Antares, then, is about 22,500,000 times further away than the sun and the distance of the sun from the earth is about 93,000,000 miles. So we can express the distance of Antares from the earth in miles if we want to do so. But what would be the use? We would obtain numbers quite beyond our comprehension. That is why the astronomer prefers to express stellar distances in terms of the light-year, the distance light travels in a year at the rate of 186,000 miles per second. Looking at it another way, then, a light-ray starting to-day from Antares will not reach this earth until 360 years have passed, and the light-rays that are now reaching us started on their journey somewhere about the year 1563.

Antares, however, is not very far away, as stellar distances go. As far as its distance is concerned there is nothing remarkable about the star unless it is its comparative nearness. What is 360 years in a universe that is probably several hundred thousand light-years in extent? Simply a stone's throw!

If we could place the sun and Antares side by side at a distance of thirty-three light years from the earth, which is

standard distance for comparing the brightness of stellar bodies, we should find that our sun would appear to us as a star of the fifth magnitude, which is a faint star just well within the range of visibility of the naked eye; but Antares would outshine Sirius, the brightest star in the heavens. Such is the relative luminosity of these two suns. The greater brightness of Antares would be due to its enormous size as compared with the sun. In surface temperature it is much cooler than the sun. In fact, these red giants have the lowest temperatures of all the stars, on the average about 3,000 degrees centigrade as compared with 6,000 degrees for the sun. Moreover, the incandescent gases of which they are composed are in an extremely rare state, the density of the red giants being less than that of the interior of a nearly perfect vacuum tube.

Antares has a small, green companion star that is nearly lost in the rays of its brilliant neighbor and cannot be found without the aid of a telescope of five or six inches diameter. What a weird system these two strongly-contrasting and mutually-revolving stars must form!

Perhaps even more impressive than the measurement of single stars of incredible magnitude has been the discovery of clouds of distant stars, with single stars often far larger than our sun and each possibly the center of a universe more extensive and complicated than our own. The following description of the famous "Magellanic Cloud" well illustrates this order of astronomic investigation:

Observers at the Harvard station in Arequipa, Peru, have measured for the first time the distance and size of the Large Magellanic Cloud, finding it to be 110,000 light-years from the earth and to contain stars 10,000 times as bright as the sun. The "Cloud" is a group of stars and nebulae resembling the milky way.

The Magellanic Cloud, which is believed to be a sort of small universe (really cosmos) in itself, proves to be of staggering dimensions. Its distance from the earth is also so immense as to be almost beyond human powers to comprehend. It is 110,000 light-years from the earth, and a light-year is six trillion miles. In other words, this means

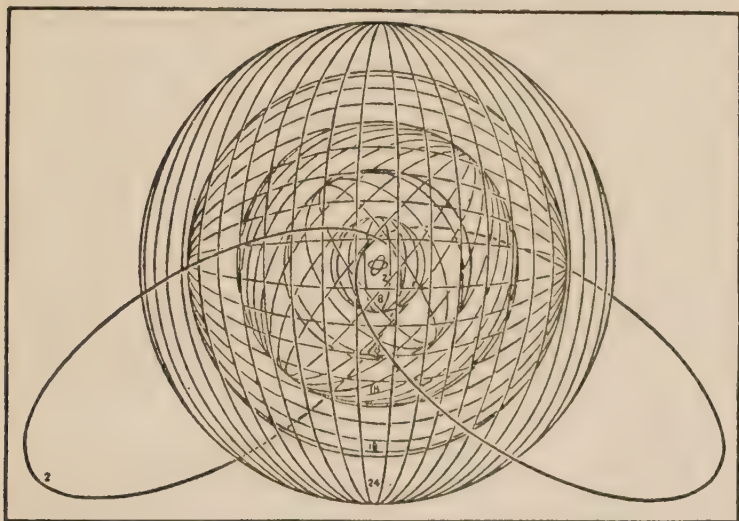
that light travels 186,000 miles a second or six trillion miles a year. Even at this speed, it would take light from the Magellanic Cloud 110,000 years to reach the earth. The distance of the Cloud in miles could, then, be ascertained through multiplying six trillion by 110,000.

In physics the equivalence and the undulatory theory of heat, light, sound and electricity have been thoroughly established by Maxwell, Hertz and others. The kinetic theory of gases was firmly proved by Clerk Maxwell and others. Much of revolutionary significance has been accomplished in the study of energy since Carnot, Mayer, Joule and Helmholtz established the fundamental thesis of the conservation of energy. Einstein demonstrated that energy is the ultimate physical fact and concept, and Planck has explained the nature of the generation of energy. Kelvin, Maxwell, Crookes and others pursued their abstruse researches which led to the modern status of electrical physics and its application to the service of man. In 1895 Röntgen discovered the famous "X-rays." Building upon the work of Crookes, Röntgen and Becquerel, Madame Curie and her husband discovered radium and the principle of radio-activity at the very close of the nineteenth century. The divers implications and modes of practical exploitation of radium make it perhaps the most striking of the many startling physico-chemical discoveries of contemporary times.

At the opposite of the magnitude revealed by the astrophysical measurements of Betelgeuse and Antares is the minuteness and complexity of the atom and its constituent electrons. The contemporary physicists, such as Planck, Thomson, Rutherford, Bohr, Millikan and others, have shown that the supposedly integral atom is actually a highly composite and intricate physical system, quite as complex as the solar system itself. The study of the atom and its structure and activities has revealed a situation about as impressive and startling as the astrophysical investigation

of the universe. Professor Slosson thus describes Doctor Bohr's view of atomic structure:²

This pictures the atom as a sort of solar system in which the sun is represented by the nucleus and the planets by from one to ninety-two electrons revolving about it at high speeds in certain fixed orbits. When an electron jumps from a larger to a smaller orbit, energy is given off in the form of radiation of a certain wave length, according to Planck's law.



Courtesy, Scientific American

FIGURE I

ELECTRIC ORBITS WITHIN THE ATOM OF MERCURY

The smallest thing with which science deals is known as the electron, which has been thus described in telling fashion by Professor Slosson:³

There is nothing better known, and nothing more important to all human beings, than the smallest thing in the world. Yet it is doubtful if the average American citizen

² E. E. Slosson, in P. W. Slosson, *Twentieth Century Europe*, p. 703.

³ E. E. Slosson, *Keeping Up with Science*, pp. 310-11.

could tell, offhand, just what it is, much less how small it is, and how much—or rather, how little—it weighs.

Well, the smallest thing known to science is an *electron*, and the diameter of one of these “corpuscles,” considered as a sphere, is about one five-thousand-billionth of an inch. In other words, it would require 5,000,000,000,000 (five trillions) of these tiny particles, placed side by side, to cover the distance of one inch.

It is these infinitesimal corpuscles that constitute what we know as an “electric current”—i.e., they are the individual “specks,” which, following one another at a speed comparable to that of light, constitute the electric current. Each electron “weighs” about one eleven-octillionth of an ounce. Professor Fournier D’Albe calculated that the number of electrons in the human body is—just write 10 and follow it with 30 zeroes, and that’s how many!

Now, electrons have not only been weighed and measured, but they have been counted in their swift flight along conductors; and, thanks to Professor Robert A. Millikan, we know how many electrons a second are required to give us the amount of light obtained from a common 16-candle-power electric lamp. To state the number in figures is futile, for, as a matter of fact, no human mind can really think of even one million of anything, in the sense that it visualizes a hundred, or a few thousand, of objects.

Realizing this fact, Professor Millikan put it this way: the quantity of electricity which courses through such an electric lamp *every second* is so large that if two and a half million persons were to begin to count out these electrons, and were to keep on counting them out, at the rate of two a second, and if no one of the counters were ever to stop to eat, sleep, or die, it would take them just 20,000 years to finish the task!

Thus the electron, of which all the atoms, molecules, and substances in the universe are composed (with a nucleus, in each atom, of positive electricity), is not only the smallest thing in the world, but also the entity possessing the greatest velocity—in some cases nearly 186,000 miles a second, the speed of light.

In the field of chemistry one of the outstanding developments in the last fifty years has been the remarkable and

fundamental advances in physical chemistry connected with such things as the study of the equilibrium of chemical reactions and other thermodynamic relations by Josiah Willard Gibbs and others, and the investigations of electrolysis by Clausius and Arrhenius. Mendeleeff established the periodic law which prevails among the chemical elements. Emil Fischer and others, building on the earlier discoveries of Liebig, Wöhler and Kekulé, produced the remarkable work done in the way of synthetically creating organic substances and founded the important department of economic chemistry. The wonders achieved here have been eloquently described by Doctor Darrow in his *Story of Chemistry* and by Professor Slosson in his *Creative Chemistry*. It requires two pages of fine print merely to catalogue the products derived from a ton of cotton-seed which was formerly entirely wasted. These products run from smokeless powder to photographic films, from felt to soap, and from salad oil to washing powder. Chemical research in the field of colloids and conductivity has shown that life and death are nothing more than a difference of chemical states. Many persons have literally been raised from the dead by the introduction of certain chemicals into their bodies, while the creation of life can be stated in chemical terms. Physiological chemistry has not only revealed life itself to be fundamentally a form of chemical behavior, but, in the domain of endocrinology, founded by Cannon, Crile and others, has revealed a novel and highly important set of chemical controls basic in human behavior, particularly the emotions. Especially important has been the work of the above mentioned writers in the field of endocrinology. They have shown the enormous influence of the hitherto mysterious glands of internal secretion in controlling metabolism, promoting the growth of the body, conditioning the emotions, absolutely determining sex, and, in their imperfections, giving rise to a great variety of physical and mental disorders.

In biology the greatest achievement was, perhaps, the def-

inite vindication of the evolutionary principle launched by Darwin and Wallace. While flaws have been revealed in some of the details of the processes regarded by Darwin as fundamental in the evolution of life, the vital principles which he suggested have been established as firmly as any law or process of science. The genetic processes of heredity have been studied thoroughly and have enabled contemporary biologists to correct the errors and fill the gaps existing in Darwinian biology. The work of Weismann, overthrowing the Lamarckian hypothesis of the inheritance of acquired characters, and the enunciation of the principles of heredity associated with De Vries and Mendel, have been the most significant here. The mechanism of heredity, involving the conception of *chromosomes* and *genes*, has been studied in great detail by T. H. Morgan and others. The conception of the *gene* is of particular importance, for the fact of the stability and non-modifiability of the *gene* by the organic or social environment completely destroys the old view of the possible inheritance of acquired characters. Pasteur and Virchow placed pathology and bacteriology upon a scientific foundation. A better understanding of the cell was made possible through the scientific studies in cytology by E. B. Wilson and his associates in this field. Physiology has been given a more dynamic character and is thoroughly linked up with contemporary chemistry. Physiological chemistry has acquainted us with the nature of the vitamins and left many important suggestions with respect to food values and metabolism. The conception of basal metabolism has afforded the clue to more penetrating and elemental conceptions of health and vitality.

In geology more plausible hypotheses of the origins of the earth have been suggested than the nebular hypothesis of Laplace, particularly the planetesimal theory of Chamberlin and others. Glaciation has been studied in a scientific fashion from the standpoint of: (1) its causes, periodicity and physiographic results, and (2) its effects upon the oscilla-

tions of organic life. Economic geology has developed into an indispensable adjunct of industry through its revelation of the nature and extent of deposits of oil, ore and other natural resources highly important in the processes of modern industry.

In geography much more exact knowledge has been acquired concerning the topographical facts related to the earth's surface. Physical geography has been made a precise descriptive science. It has been given a sounder methodology through the development of regional geography by Vidal de la Blache, Richthofen and their followers. Climatology has evolved into a true science, involving both physics and geography, and the cultivation of meteorology has gradually produced scientific means of studying and predicting weather conditions. Above all, physical geography and climatology have been definitely linked up with the social sciences and the welfare of man through anthropogeography, or the scientific analysis of the interrelation between man and his culture, on the one hand, and the geographic surroundings, on the other.

Psychology, which fifty years ago was little more than a combination of theology, metaphysics and phrenology, has now become in most respects a truly experimental and observational science, and has proved itself of enormous importance with respect to the understanding and guidance of human life. Neurology has made it possible to base psychology upon scientific biology and physiology. Endocrinology has indicated the important nature of the chemical controls of human behavior and the processes of metabolism. Behaviorism, in its more extreme form as developed by Watson, is an effort to make psychology a branch of biology and denies the significance of the subjective in human conduct. It has done pioneer genetic work in the study of human habits and socially conditioned behavior. An attempt at a synthetic study of behavior has been made by Köhler, Koffka and other exponents of the so-called "Gestalt psy-

chology." Psychophysics, as developed by Weber, Titchener and others, has made possible the establishment of as exact an experimental laboratory technique in certain restricted fields of psychology as that which prevails in the physical sciences. Psychiatry, as cultivated by Freud and more critical successors, has made use of medicine, psychology and anthropology to effect a revolution in our knowledge and control of abnormal behavior. It has, moreover, amply demonstrated the absence of any sharp boundary-line between the normal and the abnormal in mental life. Social psychology has provided a means of studying the behavior and mental life of groups and has much of indispensable value to offer to students of the social sciences and modern social problems.

Modern medicine has kept pace with the progress in physics, chemistry, biology and psychology, and has passed from a combination of magic and astrology into a relatively exact observational science, particularly in the field of surgery. With the development of anesthetic and antiseptic surgery to a degree scarcely anticipated in 1900, the provision of X-ray photography for surgical diagnosis, and the discovery of chemical devices and substances designed to stimulate the recovery of patients likely otherwise to succumb from the shock of a severe operation, contemporary surgery has achieved an astonishing precision and efficiency. Bacteriology and the germ theory of disease have made possible the development of sanitation and preventive medicine, something quite as important as curative or therapeutic medicine.

Finally, science is no longer limited to the physical and biological sciences, but has come to include the sciences of man and culture, namely, the so-called "social sciences": anthropology, history, sociology, social psychology, economics, political science and ethics. Slow but real progress is being made here in the way of developing an objective attitude toward human problems, in introducing the quan-

titative method of studying social phenomena, and in moving on from classification and definition into a real analysis of social processes.

III. THE INTELLECTUAL IMPLICATIONS OF MODERN SCIENTIFIC ADVANCES

1. *The Evolutionary View-Point*

Having surveyed all too briefly and superficially the outstanding aspects of the development of science in the last fifty years, we may now indicate the bearing of this new information upon the views of God, the world and man which were prevalent, even among educated classes, a half-century back.

In the first place, we should make reference to the contributions of the evolutionary view-point. Here the first striking implication to be noted is the complete revolution of our time perspective which the evolutionary conception has made necessary. In the place of a very brief period of some six thousand years for the age of the earth and all living matter, we must reckon with a time conception which defies both the human imagination and our conventional standards of measurement. Hundreds of millions of years must be assigned to the earth in a minimum estimate, whereas the sun had passed its maximum radiance before the earth originated. When one turns to the probable amount of time involved in the evolution of the cosmos, the conceptions and standards which prevail in measuring time for earthly purposes seem quite trivial and inadequate. Indeed, we may have to admit that, in the new cosmic time perspective, the very notion of time as we understand it may be nothing more than a convenient geocentric illusion. Einstein and others have, indeed, suggested that time and space are but incidental manifestations of energy. The age of man in this new time perspective, instead of being coexistent with the duration of the earth and all the heavenly bodies, must

be regarded as but the briefest trifle in earth history to say nothing of its utter insignificance in terms of cosmic history.

Along with the revolutionized time perspective has come the dynamic notion of change as the vital and universal principle of cosmic development. In the place of the older static notions of a perfect creation a few thousand years back, with but slight subsequent alteration of the nature of the heavenly bodies, the earth and its organic life, we have to recognize that change appears to be the most vital law of cosmic development and to realize that there is no such thing as a static condition to be observed in the universe. Everything is in a state of alteration, some of this being in the way of development and progress while other changes definitely manifest disintegration and devolution. We have, then, the conception of a dynamic and ever-changing universe in the place of the static outlook of a half-century ago.

A third vital implication of evolution is the fact that man has been demonstrated to be, not a theological entity a little lower than the angels or higher than the earthworm, but a definite biochemical entity, at the present time the temporarily dominant type in the animal kingdom inhabiting this planet. There seems to be nothing about human life or behavior which is in any sense unique and not susceptible of explanation according to naturalistic laws and principles.

2. *Implications of Contemporary Astrophysics*

Unquestionably, the most disconcerting of all the phases of modern scientific advance to those who adhere to the older outlook has been contemporary astrophysics. This is infinitely more disruptive of the older cosmology, theology and morality than evolutionary biology, which can, by heroic exegesis, be made to conform to a geocentric point of view.

In his recent and interesting book, *Science: the False Messiah*, Mr. Clarence Ayres holds that modern astrophysi-

cal discoveries have little bearing upon the practical issues of every-day life. He contends, for example, that "morality is never likely to take cognizance of the magnitude of Betelgeuse." Such a view might seem plausible at first sight to an eminent Rotarian or Fundamentalist, but it is a strange position to be defended by a liberally inclined person of philosophic tendencies. It would be difficult to conceive of anything more relevant than the matter of Betelgeuse in relation to our contemporary moral conceptions. If we had not discovered another solitary scientific fact in the last century, the implications of the size and distance of Betelgeuse would be adequate to blow sky-high the foundations of the whole set of moral conceptions of Judaism and Christianity. These were based upon a geocentric theology, and their plausibility disappears the moment the geocentric basis is removed. Betelgeuse not only wipes out the notion of a geocentric universe and God but likewise that of a heliocentric cosmos. All of the assumptions and premises underlying orthodox Judaism and Fundamentalist Christianity evaporate the moment one grasps thoroughly what is implied in the recent discoveries concerning Betelgeuse or Antares. Once these theological props for conventional morality disappear, we shall face a notable reconstruction of ethics in harmony with scientific facts. It would seem, therefore, that Mr. Ayres could not well have been more unfortunate in the striking figure which he chose to illustrate the irrelevance of modern science for human conduct.

As we indicated above in connection with the development of contemporary astrophysics, it is practically impossible for us to envisage or describe the extent of even that small portion of the cosmos known to man in terms of mundane conceptions and standards of measurement. The unit of measurement long popular in contemporary astrophysics—the light-year of six trillion miles (the distance traveled by a ray of light in a year)—has now been abandoned for extensive celestial calculations and has been supplanted by the *parsec*,

a unit of approximately nineteen million million miles. To illustrate its application to cosmic measurements and also to show the extensive nature of heavenly spaces it may be said that we now have discovered some ninety-five globular clusters of stars and that some of these clusters occupy an arc of seventy thousand *parsecs*. As indicating the rapid nature of our progress in discovering the vastness of the universe of universes, it may be pointed out that more than thirty of these clusters have been discovered in the last decade. Yet we have no way of being sure that the portions of the whole cosmos thus far detected by man are anything more than the smallest fractional corner of the totality. Indeed, in the new cosmic perspective we may have to come to recognize that space, like time, is but a finite geocentric standard and category, incidental to divine or cosmic energy.

In even so incomplete a cosmic perspective as man may attain, the earth immediately shrinks from the position of the largest and most important unit in the cosmos to a relatively insignificant and highly recent astral exhibit—a celestial juvenile and cosmic dwarf from every angle. It is, from the standpoint of time and space, certainly most inconsequential indeed. Man likewise tends to shrink in terms of the new cosmic outlook. Far from being “the lord of all creation,” existing from the beginning of things, he now appears to be but a highly temporary chemical episode on a most petty planet. Astronomically speaking, man is almost totally negligible, while from the standpoint of his biological antiquity and continuity he is far outdistanced by the lowly cockroach which has remained substantially unchanged for more than fifty million years. These facts regarding the insignificance of the earth and man in the face of our modern views of the cosmos have been well stated by Professor Harlow Shapley:⁴

The thing that appalls me is not the bigness of the uni-

⁴ H. Shapley, in *New York Nation*, May 7, 1924.

verse, but the smallness of us. We are in all ways small—little in foresight, shriveled in spirit, minute in material content, microscopic in the vastness of measured space, evanescent in the sweep of time—inconsequential in every respect, except, perhaps, in the chemical complexities of our mental reactions. In that alone our advance may surpass that of other terrestrial organisms.

But the sanctity of all protoplasm has practically disappeared in this, the heroic age of the physical sciences, when knowledge of the material universe, its content, structure and dimensions, has so completely overthrown egocentrism. It should sufficiently deflate the organism, you would think, to find that his fountain of energy, the sun, is a dwarf star among thousands of millions of stars; to find that the star around which his little parasitic earth willessly plods is so far from the center of the known stellar universe that sunlight, with its incomprehensibly high velocity, cannot reach that center in a thousand generations of vain men.

The deflation, however, is not stopped at that point. We now reach much deeper into space than a few years ago, find millions of stars mightier than our sun, find greater velocities, larger masses, higher temperatures, longer durations than we have previously known. Even more illuminating, in this orientation of organisms in the physical universe, is the revelation that the earth, whose surface we inhabit, is not a parcel of grand antiquity. Rather recently, as astronomers now measure time, a singular incident happened in the life-history of the sun. Before that time the earth was not, nor were the animals of the earth. Nevertheless, for trillions of years, in the absence of the "Lords of all Creation," the stars had poured out their radiant energy, the celestial bodies had rolled on, law had governed the universe. Before that event, you and I, the material of our bodies, were electrons, and atoms in the solar atmosphere. Since then we have been associated with the inorganic and organic evolution of a smaller concern.

The earth, as I have intimated, appeared only a few thousand million years ago. Our sun, it seems, had already passed its prime of radiance when in its wanderings through celestial space it met up with another star—a stellar romance—a marriage made in the heavens. From that affair—realistic astronomers call it an encounter—the planets of

the sun were born. The passing star, ruffling up the exterior of the sun, detached some relatively small fragments of the solar atmosphere. Now we strut on one of the surviving fragments and wonder and speculate and discuss: "How can we better the world?" Crown of absurdities:—*we* repairing the world! That cast-off fragment, the ancestor from which and on which we descend, was composed wholly of gas! An emblem for us, that ancestral hot vapor—"How can we straighten out the world?"

The gaseous planet quickly liquified as out in cold space it began its tireless revolutions around the parent sun. Soon after a crust formed, and we may thank our lucky stars, the distance from the sun was right, the atmospheric and crustal chemistry was right, and other adjustments of the physical environment happened to be suitable for an elaboration of chemical reactions. The energy of the overflowing sunlight aided in complexifying this protoplasmic chemistry, a green mold formed in spots on the planet, and here we are—parasites on the energy of the sun that cast us forth. How can we better the world?

Professor Kirtley F. Mather expounds the same general position set forth by Professor Shapley, laying special stress upon the alteration of cosmic outlook since the time of Joshua:⁵

Joshua's world was made expressly for man. Everything in it was designed especially to contribute to his welfare or to punish him if he incurred the displeasure of his god. He occupied the summit of the tall pinnacle of superiority, not because he had won his way to that proud eminence but because he had been placed there by the Creator. The locality where he lived was the center of the universe; sun, moon and stars revolved around him and it. Joshua's concept of man's place in nature has lingered long in the minds of his descendants; echoes of that concept are still with us. Did not Linnæus give the name "Primates" to that order of mammals which he defined as including man?

But Our World is not so flattering. "What is man that thou are mindful of him?" has a new meaning since Betelgeuse was measured. In geologic time, man has lived for

⁵ K. F. Mather, in *World Unity*, October, 1927, pp. 35-37.

but a moment in the earthly day. In astronomic space, he is a speck of foam on the crest of a single wave of a Pacific Ocean. The earth is neither the smallest nor the biggest, the hottest nor the coldest, the most central nor the most remote among the planets of the solar system. Presumably there are many other similar bodies in the heavens. Except for the fact that you and I are on its surface, there is nothing especially distinguished about it. The sun is just an ordinary star. There are many larger, many smaller; many hotter, many colder; many brighter, many duller. Presumably many of its neighbors in the heavens have fully comparable planetary dependents in their train. The stellar galaxy is but one of the many far-flung aggregates of stars. So far as we are aware, it may be duplicated many times in space. Only our presence for a brief span of years upon this insignificant earth gives importance to one particular star in one of many galaxies of stars.

There is no reason for assuming that human life is the most superior expression of the vital impulse which the universe has yet achieved. It is scarcely likely that the Administration of the Universe has staked all on this one type of life in this one locality. Perhaps on some distant planet the achievements of the Universal Spirit far outstrip anything that man has yet attained. But for us, Our World in this particular geologic epoch gives The Opportunity. It is Man's hour; the prize is almost in his grasp. Dominion over his fellow-creatures is for all practical purposes his; mastery over the forces of inanimate nature is well-nigh assured; only Self, individual and aggregate, remains to be subdued. Our World is not a furnished stage on which the puppet man enacts a rôle; it is a challenge to the best in man to overcome all handicaps and emerge successful in the attempt to achieve a truly satisfactory life.

In Joshua's World anything could happen. Magic played a most important part in everyday life. Happenings were determined by the caprice of ruling powers whose whims and intentions varied from day to day. Ours is a world of law. Effect follows cause with unvarying relations. Order and regularity reign where formerly magic and caprice held sway. The law of gravity operates relentlessly, the same yesterday, to-day and to-morrow, regardless of bribe or entreaty.

3. *Astrophysics and Religion*

The implications of modern astrophysics are absolutely destructive to the orthodox version of the Christian Epic, as well as to orthodox Judaism or any other type of geocentrically circumscribed religion. The old views of God as a venerable and somewhat gigantic being, resembling man in every detail, frequently taking up his abode upon this earth and being at times accessible to call from his more faithful supporters; the notion of the earth as the chief product of the creative endeavor of God and the supreme object of His divine solicitude; and the view that Christ could have been in any literal sense "the only begotten son of God" offered up as a vicarious sacrifice for the sins of a small group of rather backward peoples dwelling at the extreme eastern end of the Mediterranean Sea—all such conceptions become easily and immediately recognizable as primitive anthropomorphic and geocentric misapprehensions. While it may be true that the age, size and complexity of the cosmos revealed by modern science make more plausible than ever the hypothesis of a divine creative and controlling principle, anterior to and directive of the whole cosmic process, yet this new cosmological God can in no way be harmonized with the petty anthropomorphic tribal deity which the ancient Hebrews seem to have derived through an accident of Moses' particular conjugal adventure.

If this be so, then it is also true that we must cease talking of God in terms of the circumscribed anthropomorphic deity of the Hebrew and Christian Bible. If it be true, as Doctor Fosdick suggests, that there is a greater need than ever for a firm conviction of divinity and for an adequate conception of God, this newer view of God must be formulated in the light of contemporary astrophysics which completely repudiates the theological and cosmological outlook of Holy Scripture. What we need, if a notion of God

is needed, is such a conception of God as Doctor Fosdick might work out in the face of the astrophysical discoveries and conceptions of Shapley and Michelson, and the study of atoms and electrons by Bohr, Planck and Millikan. It is of little value to attempt to inculcate a view of God so hopelessly inadequate and out of date as that which was slowly and painfully evolved by the semi-barbarous Hebrew peoples in the days when a rudimentary type of geocentric and anthropomorphic outlook reigned supreme and unchallenged. It goes without saying that the cosmology and the social and moral ideas ascribed to the geocentric God of the Hebrews must find other sanctions and justifications than their Biblical derivation if they are to be accorded respect by serious-minded people. The general implications of this fact have rarely been recognized though they are immensely significant and far-reaching.

It is sadly contended by many that the uprooting of the Christian Epic and its philosophy of life destroys all meaning in human experience. It is obvious that what is meant here is really that it destroys the philosophy of existence involved in supernatural religion. It does not in any sense abrogate any real *rationale* in human experience. On the contrary, it has for the first time in Western civilization provided a substantial basis for an intelligent interest in mundane existence. It has first made possible the dream of Lucretius, who longed for the day when the supernatural obsession, with all its fears and wasteful ceremonial, might be laid aside and man could devote himself to making his earthly existence more pleasant and significant. The secular orientation made necessary by modern science offers both a compelling challenge and an unique opportunity which are far richer in content and meaning than the primitive absorption in escaping from the abstraction of sin and securing the salvation of a hypothetical soul or ghost. If it be alleged that the relinquishment of the conception of a personal God is a great loss, one can successfully answer that the fatherhood

of the Hebrew God, which is what is meant, was scarcely a comforting conception. A cosmic spirit, benevolently inclined toward intelligently directed human effort, is a far more dynamic and satisfying background for human aspirations.

The desirability of even completely abandoning the old "hunger for cosmic support" and the craving for supernatural solicitude, and of adopting an attitude of courageous secularism is admirably stated by Professor Max Otto in his striking book, *Things and Ideals*:

Accept the stern condition of being physically alone in all the reach of space and time, that we may then, with new zest, enter the warm valley of earthly existence—warm with human impulse, aspiration and affection, warm with the unconquerable thing called life; turn from the recognition of our cosmic isolation to a new sense of human togetherness, and so discover in a growing human solidarity, in a progressively ennobled humanity, in an increasing joy in living, the goal we have all along blindly sought, and build on earth that fair city we have looked for in a compensatory world beyond.

Not only does the destruction of crude supernaturalism make life more rational in aim and purpose and richer in content, but it also makes death easier to contemplate. For the first time we can actually inquire with complacency "O death, where is thy sting?" Could anything be more satisfying as the ultimate reward of activity than the state of complete extinction to be realized in the chemical state known as death? If it be alleged that it cruelly puts an end to earthly ties and relationships, it can be countered that this is not always unmitigatedly tragic, and that, anyhow, the orthodox Christian heaven was not a place primarily designed to promote family reunions or to consummate unrealized earthly romances.

4. *Astrophysics and Homo Sapiens*

The evolutionary biological conceptions and the new cosmology are as disruptive of the accepted views of man as they are of the older theological attitude toward God. According to the accepted Biblical theory, man was a theological entity and not a unit of biochemical behavior. He was important chiefly as the custodian of an immortal soul for which his fleshly being merely served as the temporary envelope pending the earthly experiment which determined the ultimate destiny of each individual soul. In the more optimistic passages of Holy Writ man was defined as only a little lower than the angels, while in the abject strains he was viewed as but a worm of the dust. The scientific facts reveal man as neither a worm nor an angel with pruned wings. He is the leading member of the simian group and, therefore, the dominant element for the time being in the animal kingdom.

This view of man as an animal has been extremely repellent to many of the more pious and conventional brethren, but there is little rational ground for such an attitude, once it is understood what one really means by the inclusion of man in the animal kingdom. When one views the situation in a scientific and common-sense attitude one recognizes that the animal kingdom represents the highest order of life on the planet, that is, the highest level of organic development known to man. Therefore, to be the temporary leader of the animal world is the highest form of achievement to which man could possibly pretend, and this title is the superlative praise which can possibly be bestowed upon *homo sapiens*. The older theological conception that man is only a little lower than the angels or is made in the image of God may be in a certain way more flattering, but it is not consistent with modern scientific knowledge, and must be discarded along with other illusions of a primitive derivation.

Further, not only is the conception that man is an animal a demonstrated fact in no way humiliating to the human race; it also has much more of practical significance. Even if it were known to be true that we are slightly mitigated angels, this would afford no clue for the study of mankind, because no one has seen an angel and we possess no knowledge of the personal traits and behavior patterns of the angelic host. On the other hand, once we come to recognize the fact that man is an animal, we immediately have the rich fields of comparative anatomy, physiology and psychology to draw upon and from which to build a solid approach to the study of human nature and behavior. These branches of science reveal man as a super-simian, and the study of simian psychology, as summarized in such books as those by Kohts, Köhler and Yerkes, affords more in the way of a key to human behavior than all the books on theology ever compiled from the days of primitive folk-lore to the most abstruse apologetic manual of a contemporary professor of systematic theology. Even a humorous and avowedly trivial little book like Clarence Day's *This Simian World* will tell one more relevant and cogent things about human nature than all the ponderous tomes of an Aquinas or the collected sermons of a dozen Moodys, Talmages or Spurgeons.

The implications of the above for sociology and ethics are very great and far-reaching indeed. They come down to this, namely, that the type of behavior and institutions which are best suited to advance human happiness and efficiency must be sought and constructed in conformity with the needs of a species of super-simians temporarily inhabiting divers types of geographic environments. Morals can no longer be intelligently discussed in relation to the type of conduct befitting a mystically interpreted theological entity aiming to secure the safe translation of his hypothetical, metaphysical soul into a supposititious, eternal, spiritual world. This need not be taken to mean that man must or should dispense with religion, but if he is to retain a religion which will have

permanent social value it must be a reconstructed religion, worked out in harmony with our present knowledge of the nature and requirements of man in secular social situations.

5. *The Right To Be Happy*

Contemporary astrophysical discoveries have been paralleled by the progress of research in anthropology, the history of religions and Biblical criticism, which have clearly indicated the nature of the Bible and the origins of our conventional religious beliefs. These types of scholarship have proved the lack of evidence for any justification of the ancient absorption with eschatology and the effort to attain heaven and avoid hell. This has necessitated a complete revolution in the accepted views of the purpose of life. This earth can no longer be viewed as a temporary training-camp, preparatory for life in the New Jerusalem. Rather, it can be rationally regarded at present in no other way than as a place in which man should make himself as happy as possible during his temporary existence here upon earth.

Not only must the objectives of human life be reduced to a secular plane, but we may now definitely enunciate and defend "the right to be happy." The old theological taboo upon secular felicity in a terrestrial setting was based upon supernatural considerations which we may now discard with safety and assurance. Modern science, especially mental hygiene, has indicated the desirability of freeing ourselves from the inferiority-complex and the fears and worries which are prescribed for the faithful Fundamentalist Christian. Much better is the ancient Greek ideal of serenity and self-confidence. Likewise, the Christian solemnity should be replaced by the frank joy of life. A sharp distinction must be made between solemnity and seriousness, the absence of this differentiation being one of the chief defects of contemporary civilization, particularly the civilization of Anglo-Saxon peoples.

To be sure, we may concede at the outset that happiness need not be identified with the tastes of Casanova or Fatty Arbuckle, on the one hand, nor with those of Immanuel Kant, Anthony Comstock, Wayne B. Wheeler or Irving Fisher, on the other. We must formulate a conception of happiness which will be sufficiently comprehensive and well grounded. Perhaps, as a statement of general principles, we can do no better than to revert to the one great previous effort to formulate ethical principles on secular foundations, namely, the ethics of the Greeks and particularly Aristotle's conception of virtue as the "happy mean." But we can go further than the Greeks in transforming this generalized formula into terms of specific guidance through our present-day knowledge of biology, psychology, psychiatry and sociology.

6. *How To Be Good*

If these conclusions regarding the desirability of an exclusively secular outlook are correct, then the practical and detailed guidance to the achievement of the "good life" must be sought in the sciences of nature and of man and not in supernatural revelation or theological dogmas. If we are to know what is good for man as an animal we must turn to the sciences of chemistry, physiology and biology, which indicate the processes and requirements of his physical nature. We must study psychology and psychiatry to comprehend the processes involved in man's behavior in association with other biochemical entities, like unto himself in general pattern, but often differing markedly in specific hereditary dispositions and acquired complexes. The social sciences must be appealed to in order to understand the nature of the social institutions that condition the individual behavior and group activities of man. We must not only know what institutions are likely to prove most beneficial to the human animal but also how institutions develop, change and control humanity. Then we must especially cultivate esthetics to

discover what ranges of human interests and achievements may be opened up beyond the essential satisfaction of his biochemical needs and the realization of his material well-being.

Two things, then, are perhaps most conspicuous about the sources of guidance for the "good life" in terms of a contemporaneous view of things: (1) the multiplicity of those secular sciences and fields of endeavor which must be drawn upon, and (2) the entire absence of the theologian in this process. The theologian, in the modern scheme of things, has no more propriety in morals and esthetics than in engineering or physical chemistry. The Bible, as such, need not be approached with any more reverential awe respecting its injunctions with regard to human conduct than we might bring to it when exploiting it in studying the history of medicine or cosmology. If the Ten Commandments are to be obeyed to-day, it can only be because their precepts and advice may be proved to square with the best natural and social science of the present time. They must be subjected to the same objective scientific scrutiny as that to which we would submit the cosmology of Genesis or the medical views in Leviticus.

The new cosmic perspective and Biblical criticism, indeed, rule out of civilized nomenclature one of the basic categories of all religious and metaphysical morality, namely, sin. One may admit the existence of immorality and crime, but scarcely sin, which is by technical definition a wilful and direct affront to God—a violation of the explicitly revealed will of God. Modern science has shown it to be difficult to prove the very existence of God, and even more of a problem to show any direct solicitude of God for our petty and ephemeral planet. Biblical criticism, the history of religions and cultural history have revealed the fact that we can in no direct and literal sense look upon the Bible or any other existing holy book as embodying the revealed will of God. Consequently, if we do not and can not know the nature of the will of God in regard to human behavior, we can not very

well know when we are violating it. In others words, sin is scientifically indefinable and unknowable. Hence, sin goes into the limbo of ancient superstitions such as witchcraft and sacrifice. It will, of course, be conceded that many acts hitherto branded as sinful may be socially harmful, but such action should be scientifically rechristened as immoral or criminal, and we should as rapidly as possible dispense with such an anachronistic term as "sin" even in popular phraseology. In this way will sin "vanish from the world!" The psychoanalysts have already shown that the "sense of sin" is but a psychophysical attribute of adolescent mental development.

7. Determinism as a View of Life

Even the rudiments of our present scientific knowledge concerning the nature of man and his behavior serve completely to destroy the conventional view of man as a free moral agent, capable of making unlimited freedom of choice, irrespective of his biological ancestry or his social conditioning. Modern biology, physiology and psychology offer simply unlimited proof that the free-will hypothesis is as incapable of scientific support as the astrophysical doctrines which made plausible Joshua's heroic feat in the way of solar control. Differences in original endowment make it quite impossible for certain individuals to react in identical ways to the same type of social conditioning. Diversities in surroundings and experiences lead to great variations in the social conditioning of individuals and in the complexes thus developed. This conditioning of response determines the behavior of individuals, and any such conception as that of ability to act in an arbitrary manner independent of inherited traits and social experience is the most transparent nonsense to anybody familiar with the rudiments of human psychology. Conduct is the inevitable resultant of a vast set of influences, running from the general physical nature of

mankind and the particular hereditary traits of each individual to the effects of the most recent set of experiences which have operated upon his psyche. Our personality at any time is but a cross-section of the habit-complexes which have been built up in the lifelong process of conditioning. Human behavior, then, reveals a process of strict determinism obeying scientific laws as invariable as the law of gravitation.

There is nothing alarming about this conception, as it merely means that human conduct is not independent of the range of scientific causation. When we say that an individual "chooses" some action, we can only mean, in scientific terminology, that the complex of conditioning which led him to the type of action "chosen" was more powerful than the conditioning which pressed him toward a different decision. That man has the power to select in an arbitrary and independent manner the particular conditioning to which he will respond is as silly in its scientific assumptions and implications as to hold that an apple may choose whether it will rise or fall from a tree. One should, of course, differentiate sharply between determinism and fatalism, which are often confused but are fundamentally different in nature. Determinism means that nothing happens arbitrarily but always as the result of a definite chain of causation in harmony with scientific laws and processes. Fatalism implies exactly the opposite, namely, that something is predestined to happen in some particular fashion at a given time wholly independent of antecedent or predisposing circumstances.

The deterministic position carries with it very revolutionary applications to social policies. It quickly becomes apparent that no one can be held to be personally responsible for his actions, for they are the result of hereditary and social conditions over which he had little or no control. Man can not be wilfully perverse. A man who commits a multiple murder is no more responsible for his behavior than an amiable and generous philanthropist. Therefore, if one, for

example, desires to reform a criminal he must subject the criminal to a new type of social conditioning which will, if possible, become more potent than the set of previous experiences which led him to commit crime. If one wishes to lessen the volume of crime he must endeavor to decrease or eliminate those social habits, customs and institutions which furnish the basis for anti-social conditioning or bad habits. The conventional theory of punishment as social revenge for arbitrary or wilful perversity dissolves at once in the light of the contemporary conceptions of the determination of conduct through biological and social influences.

It is frequently held that, whatever the scientific validity of the deterministic view of life, it is a pessimistic philosophy, and that any rational motivation for social progress and reform can be found only in conformity with the free-will hypothesis. Exactly the opposite is the case. The free-will conception offers no basis for constructive social work. According to its tenets, a child might be born of eugenic parents so perfect as to make Francis Galton turn in his grave for joy, be given every opportunity for an excellent education, and have the best of surroundings, and yet might at any time burn down an orphan asylum or rob the vaults of the Salvation Army. From the deterministic point of view we can feel assured that the person who is born with normal qualities and is afforded the opportunity to build up normal social habits is not likely to go wrong. We can thus work with some confidence in the task of improving the human stock biologically and in eliminating those social environments which constitute the breeding-places of bad habits and of anti-social attitudes and actions.

8. Our Cosmic Uncertainty

In the previous chapter we called attention to the general air of assurance, finality and certainty which pervaded the learned classes in previous generations. They felt convinced

that they possessed exact and satisfactory knowledge concerning God, the world, man, human destiny, the purpose and meaning of life and all the other basic issues and problems which confront man. Now all this is changed. We possess, to be sure, much more exact knowledge about the material universe and the biological nature of man, and we are coming to know more about the type of behavior most likely to insure human happiness on this earth, but the meaning of the whole matter and its setting in the cosmic scheme of things has become ever more baffling. The orthodox, dualistic cosmic philosophy, which took its origin from the Persians and represented the *rationale* of the cosmos to be the provision of an arena where good and evil might indulge in a death grapple, scarcely seems plausible in the light of modern knowledge. We are coming to have impressive concrete confirmation of Descartes' intuition that if there is a divine purpose in the universe it is of a divine character, presumably beyond the comprehension of man. Indeed, the whole teleological complex, which insists upon there being a purpose in everything, may, once more, be nothing but a circumscribed human way of looking at things.

The older idea that there is a definite time limit set to the existence of the earth and man, which will be terminated on a final day of judgment, the date of which is reasonably well established, is now seen to possess no substantial foundation. It would seem that man may look forward to a future as extensive as his past has been, though there is no reason to be certain that another cosmic accident may not occur at almost any time which will whisk the earth out of existence as abruptly as it was originally snatched in fragments from solar atmosphere. Though at some vastly distant time the sun may cool to such a degree as to make human life unsupportable on the planet, there is no reason to believe that nature can not evolve a being able successfully to assume the burden of directing mundane affairs under atmospheric conditions quite different from those now existing.

Likewise, the old view that the eschatological termination of the earth would also involve the destruction of the rest of the heavenly bodies, now appears quite preposterous. Even the disappearance of our universe would, in all probability, be attended with great cosmic complacency by its colleagues in the galaxy of universes. In other words, we can do nothing more than speculate upon what it is all about, and the declarations of eminent philosophers upon the problems of cosmic purpose and destiny are interesting for their demonstration of stylistic power or ingenious guessing, rather than for any assurance of finality or accuracy in their discourses.

Not only do we have to give up that sense of certainty and security based upon the older anthropomorphic and geocentric theology, but, as Charles Peirce suggested, the present suggestion of uniform, invariable and universal scientific laws may likewise have to be abandoned.

The old symmetrical unity and smug completeness of knowledge which was possible in an age of limited and circumscribed information and outlook and was embodied in such things as dogmatic Greek metaphysics, the *summa* of St. Thomas, and the curriculum of the old "liberal college" of half a century ago, has all but completely disintegrated. Montaigne's intuitive vision of the implications of pluralism and pragmatism has been confirmed in detail by James, Dewey and others, who have endeavored to state the implications of modern scientific discoveries for the reconstruction of philosophy. The vain anguish of even the cultured intellects of a past generation on this point is well illustrated by the following lamentation of Doctor Nicholas Murray Butler in a recent report as President of Columbia University, quite obviously directed against the distinguished Columbia professor of philosophy, John Dewey:

No small part of the social and political diseases and disorders that are now so generally discussed may be traced to

the destruction through unsound educational methods of that common body of knowledge and intellectual and moral experience which held men together through a community of understanding and of appreciation. A steadily growing unity has been displaced for a chaotic multiplicity. Pluralism, the non-religious form of polytheism, is practically what William James, who was greatly enamored of it, described it to be, "a turbid, muddled, gothic sort of effort, without a sweeping outline and with little pictorial nobility." In all its forms, philosophical and other, it is a flat denial of all that is most worth while in human experience and an open surrender of any hope either to understand or to improve the universe. Moreover, it is self-contradictory, for if there is no One there cannot possibly be a Many. It might have been supposed that Socrates had made this postulate plain once for all, but perhaps it is no longer fashionable for philosophers to know either Greek or history.

Indeed, the advances in human knowledge and their application to the transformation of society and culture may have created too complicated a situation for man to wrestle with and may have spread before him a cosmic panorama too vast for him to comprehend or digest. His failure to grapple successfully with the issues of the present age may mark the last stages of the divine experiment as applied to man. Professor Lynn Thorndike, toward the close of his excellent *Short History of Civilization*, has stated in admirable form this uncertainty of the outcome of the perplexities of contemporary civilization:⁶

Furthermore, not only with the mass of contemporary writing is it difficult to keep track of the past masters in many lands, or *vice versa*, but science and learning have so ramified, so specialized, so progressed, that knowledge and theory have perhaps grown even faster than population or popular education. No one man, however learned and characterized by breadth of interest, can even fully appreciate, to say nothing of mastering, the achievements in all the dif-

⁶ L. Thorndike, *A Short History of Civilization*, pp. 548-49.

ferent fields, while the ordinary man has no conception of the present state of knowledge. If the system of public education were more truly disciplinary, if the newspapers largely replaced crime, sensation, and sentimental matter by straightforward statement of political, social and economic happenings, and the progress of knowledge, if the magazines minimized love stories, adventure, and personality in favor of matters of more moment to civilization, if advertisements gave sound advice as to good manners in public thoroughfares and conveyances, or sensible medical, legal, and financial counsel, if the moving pictures were employed more for purposes of instruction—perhaps the average man could keep up better with the onward march of civilization. Can science shepherd the herd? That is the question. Has scientific specialization proved fatal to the humanism which enabled many leaders of thought in previous generations to publish their views in an acceptable, graceful, and forceful form? Can we have only a caste of intellectuals, as in China and India? Will the popular demand, vulgar taste, and utilitarian attitude lower everything to its own level and swamp civilization? Or is civilization now unfolding in more varied flower than ever before with more individuals of high rank in each field and with an ever increasing public following which is able to appreciate their work?

9. *The New Obscurantism*

During the eighteenth and nineteenth centuries there was in evidence a definite hang-over of that frank and honest obscurantism which rested upon a loyal and sincere acceptance of orthodox religious concepts and traditions. This position frankly opposed the scientific method and rejected all scientific discoveries which in any way conflicted with Scriptural record. The most systematic statement of this older obscurantism was set forth in the *Syllabus of Errors* of Pope Pius IX in 1864. As Professor Conybeare once remarked, this collection of alleged "errors" of the day condemned by His Holiness represented an admirable summary of the intellectual and scientific progress of the three previ-

ous centuries. In somewhat more sophisticated form this attitude is perpetuated in the writings of Chesterton and Belloc.

Without in any way accepting either the premises or the contentions of this school of thought, one can have respect for the courage and logic underlying it, once one grants the assumed premises and understands the historical background out of which it has developed. Scarcely as much can be said for a group of writers who protest that they are thoroughly conversant with contemporary scientific methods and achievements and in sympathy with intellectual progress and enlightenment, but at the same time take a decidedly antagonistic attitude toward science, once it is brought out of the laboratory and given some application to our general evaluation of life and experience. It is undoubtedly a salutary thing, as Langdon-Davies has proved, to rebuke naive, uninformed and unrestrained advocates of the omniscience and omnipotence of contemporary science, but the "new obscurantism" has gone far beyond this. Because the more original scientists, with a gift for cosmic perspective and a robust humanitarian motivation, have assumed to set forth a scientific interpretation of man and the world, these "high-brow obscurantists" have accused the scientists of developing a new cult, a new theology, or even a new mythology. When there are scientists brave and logical enough to contrast the scientific order of things with the old supernatural interpretation offered by orthodox religion, our contemporary obscurantists rush forward with the assertion that science is but offering a new religion for an older and scarcely less tenable variety. When scientists are modestly willing to admit differences of opinion, conflicting hypotheses or incomplete knowledge, this new vintage of pettifoggers surge up gleefully with the hypothesis of the general impotence of science.

Above all, they raise a great howl when a lay writer makes any effort to apply the scientific discoveries and point of

view to reconstructing the past or the future of man and society, forgetting entirely that it is certainly as permissible for the layman to exploit science without an intimate personal participation in its esoteric pursuits as it is for these lay obscurantists to denounce such attempts when they are, as is usually the case, far more innocent of science than those whom they condemn. During the last few months the writer happened to attend senior chapel exercises, in one of the oldest and most distinguished of American colleges, which were addressed by an able literary representative of the new obscurantism. In the course of his learned obfuscation he offered the opinion that most of the worth-while books which might be fruitfully perused by college graduates had been written before 1800 and contended that the account of the origins of the cosmos, life, man and society set forth in H. G. Wells' *Outline of History* was intellectually and scientifically on a level with the creation tale ascribed to Moses in the first three chapters of *Genesis*. We hold no brief for the finality of Mr. Wells' cosmology and biochemistry, but it certainly betokens an amazing innocence of logic, scientific knowledge and historical acumen to bring into the range of comparability Mr. Wells' daring and constructive effort to interpret the origins of things in harmony with the latest scientific doctrines and the primitive infantilisms of *Genesis*.

The truly "scientific" attitude toward science in the modern world may well be compared with the attitudes of the "new obscurantism" by a reading of James Harvey Robinson's *Humanizing of Knowledge* and Clarence Ayres' *Science: the False Messiah*, respectively.

IV. NATURAL SCIENCE AND THE INDUSTRIAL REVOLUTION

The final word with respect to the impingement of science upon contemporary civilization forms the natural link between this chapter and the following ones which will deal with the remarkable technological changes which have pro-

duced the contemporary era of material culture. More and more, technological progress has become wrapped up with and dependent upon the antecedent developments of the physical sciences. James Hargreaves, one hundred and sixty years ago, might invent the spinning-jenny on the basis of suggestions derived from tipping over a spinning-wheel, without any esoteric knowledge of modern physics or chemistry. Such things as the automobile, aeroplane, radio and other contemporary manifestations of our technical prowess depend, however, very decisively upon prior discoveries in highly abstruse phases of physical science. It is often unrealized what great practical industrial significance may reside ultimately in the most abstruse achievements of pure science. Willard Gibbs' paper on *The Equilibrium of Heterogeneous Substances* has been described by a great scientist as "one of the mightiest works of genius the human mind has ever produced." It was so abstract and difficult that even his fellow American physicists and chemists could not comprehend its significance at the time (1867). In our day, however, it has been said of Gibbs' memoir that "never has an abstract investigation so influenced the fundamental basis of industry as the treatise of Gibbs on heterogeneous equilibrium."

✓ A few illustrations of how science has aided in bringing about the technological wonders of to-day will serve quickly to dissipate a common tradition to the effect that there has been little direct connection between the research in pure science and the progress of mechanical methods and technology. The developed steam-engine depended upon the study of gases by Boyle and Mariotte, research into the physics of heat by Black and Carnot, and the investigation of the conservation of energy by Joule, Mayer and Helmholtz. Without the elaborate experimentation of Faraday in the physics of electricity and magnetism we should not have had the dynamo and the electric motor. The physical research into gases and electricity combined to make possible

the internal-combustion engine and the use of modern projectiles. Modern chemistry lies behind the remarkable developments in the iron and steel industry, the petroleum industry, the modern chemical dye industry, the manufacture of explosives and the utilization of many by-products. Our modern methods of communication likewise have a very complicated scientific background. It was the researches of Oersted and Ampère which made possible the telegraph. Only extremely advanced work by Clerk Maxwell and Hertz in mathematical and electrical physics enabled Marconi to launch the wireless telegraph. The radio not only depends upon such researches as these in electrical physics but also upon the invention of the thermionic valve derived from a study of the release of electrons from heated bodies. We may well accept the following statement of Mr. John J. Carty of the American Telephone and Telegraph Company to the effect that:⁷

The pure scientists are the advance guard of civilization. By their discoveries, they furnish to the engineer and industrial chemist and other applied scientists the raw material to be elaborated into manifold agencies for the amelioration of the conditions of mankind. Unless the work of the pure scientist is continued and pushed forward with ever increasing energy, the achievements of the industrial scientists will diminish and degenerate. Many practical problems now confronting mankind cannot be solved by the industrial scientist alone, but must await further fundamental discoveries and new scientific generalizations.

Those who desire to follow further this entrancing story of the impulse given to technology by pure science will do well to read the excellent chapter by Charles Desch in F. S. Marvin's *Science and Civilization* and the striking article by George Ellery Hale in *Harper's Magazine* for January, 1928.

We may now turn to a survey of the transition from the

⁷ *Harper's Magazine*, January, 1928. p. 243.

handicraft economy to what Professor John Maurice Clark has called the "empire of machines"—either the greatest boon to humanity thus far achieved or a Frankenstein monster ultimately destined to confuse and finally destroy his baffled creator.

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CHAPTER III

THE COMING OF THE EMPIRE OF MACHINES

I. ECONOMIC BACKWARDNESS OF SOCIETY IN 1750

THOUGH the expansion of Europe and the Commercial Revolution produced enormous changes in the general character and constitution of European society, yet one should not be so impressed with the magnitude of these changes as to lose sight of the fact that in the middle of the eighteenth century modern society bore little resemblance to the state of culture which to-day exists in the more advanced European areas. Intellectual life had advanced little if any beyond the state which it had reached with the Attic and Hellenistic Greeks before the Christian era, and material culture had not been transformed in its major outlines since the dawn of written history. Even the Lake Dwellers of Switzerland and northern Italy, who lived perhaps ten thousand years ago, possessed much the same industrial technique as that which existed in western Europe in the middle of the eighteenth century. Most types of domesticated animals, the chief fruits and cereals, and many aspects of manufacturing technique, particularly in the textile industry, had been widely known and utilized in the Neolithic age. The two outstanding improvements in material culture since the Stone Age had been the art of utilizing metals and the development of the science and art of navigation. There is no doubt that Voltaire or Thomas Jefferson would have been more at home in the material culture of predynastic Egypt than they would be to-day in Paris or New York City.

Industry was organized and conducted according to either the gild or the putting-out system. Industrial establish-

ments were small and simple, and personal relationships between employer and employee existed in nearly every case. Life was still primarily agrarian, there being very few manufacturing and commercial towns. The manufacturing industry was often carried on in the countryside, the finished product being taken to the distant towns for marketing. Commercial institutions were of the most rudimentary sort. The largest bank in existence in the eighteenth century had a smaller capital than is to-day possessed by the leading banks of second-class American cities. Only the most elementary start had been made toward the evolution of modern instruments of credit, such as bank-checks, drafts and bills of exchange. The problems of modern capitalism and industrialism, as we now know them, hardly existed. All awaited the unprecedented Industrial Revolution which was to install the "empire of machines" and create contemporary civilization.

II. THE GENERAL NATURE AND SIGNIFICANCE OF THE INDUSTRIAL REVOLUTION

The term "Industrial Revolution" should not be confined to any single line of economic development in modern times. Rather, a sufficiently broad conception must be adopted, so that the term will include all of the divers economic changes which have produced contemporary material culture, together with the alterations in social institutions that have followed those economic transformations. For the sake of clarity in analysis, the Industrial Revolution may be divided into three main phases or aspects: (1) the revolutionary technological changes in the methods of manufacturing, the modes of transportation and the facilities for the communication of information; (2) the rise of the factory system as a new method for the organization of industry and the discipline and application of labor; (3) and the general economic, social, political and cultural results of the new tech-

nology and the factory system, as they have reacted upon Western civilization.

1. *From Tool to Machine*

The technological changes which formed the basis for the other aspects of the Industrial Revolution rested to no small degree upon the progress which had earlier been made in natural and applied science. In the broadest general sense, the revolution in technique consisted, in the first place, in a transition from a handicraft to a machine technique. There probably has never been a more revolutionary transition in human society than was embodied in the abandonment of the tool economy and the entry into the machine age. Man now was able to harness nature and to adapt it to his services through the medium of an iron slave. Not only was there provided a new machine technique for the manufacturing of textiles; there were also developed cheaper and more effective methods for the mechanical manufacturing of metal products. A new type of motive power was found to drive the new machinery and the new agencies of transportation. The steam-engine, the internal-combustion engine and the electric motor supplanted the ox, the ass and the horse. Not only has electricity been exploited in the interest of transportation facilities; it has also been made the basis for a marvelous revolution in the communication of information, so that facts may be communicated over any distance known to this planet, with the practical elimination of the time element. Finally, this rapidly gathered and transmitted information has been able to secure a collective appropriation and dissemination through the medium of the cheap daily newspaper.

2. *Rise of the Factory System*

Equally significant was the appearance of the factory system as a new method of industrial organization and labor

discipline. The old gild and putting-out systems had been primarily based upon personal relationships between the employer and employee in industry. Both of these systems were compelled to give way to the factory system, once the machine technique had been introduced.

The term "factory system" is a little confusing, having been used in different senses by different writers. It is here employed to mean the labor (personal) organization of the modern machine-equipped plant. While it has been used by excellent authorities to designate any considerable aggregation of workmen, even with merely handicraft tools, under a single management, such units are better called "central shops" to avoid confusing centralization for convenience with the intricate compulsory centralization of the machine age. In the familiar modern sense in which it is used here, the factory system is the necessary accompaniment of the present-day machine technique, since the new machinery of the Industrial Revolution could not have been installed in the households. The factory system provided a radically different type of industrial discipline. Far larger numbers of individuals were brought within one establishment, the personal relations between the employer and the employee tended to disappear, the worker became regimented in all of his activities and was essentially at the mercy of the employer until labor organizations had provided a means for collective bargaining and proletarian defense.

3. General Material and Cultural Results

Finally, the Industrial Revolution meant not merely a changed technique and a new type of industrial organization, but also produced deep-seated and extensive economic, social and cultural reactions. The mechanical technique, carried on under the factory system, led to an enormous increase in the production of commodities, stimulated commerce, called for a much larger application of capital, reduced labor to a

condition of general dependence upon the capitalist class, produced larger and improved banking and credit institutions, created corporations and other forms of industrial organization, and stimulated large-scale business combinations tending toward monopoly. Likewise, a new theory of business enterprise evolved. Immediate pecuniary profit became the chief motive and criterion of economic effort and success.

 Social conditions were also profoundly altered. Civilization changed from an agrarian to an urban basis. The modern city, with all its varied social problems, was created. Population tended to increase rapidly, so that the number of people living in Europe in 1900 was, roughly, double that of 1800. Great international shifts of population took place as a result of emigration from backward countries and settlement in more highly developed areas. The intellectual results of the Industrial Revolution were notable. The individual was able to receive information from all over the world, due to the new methods of communication. He read to a far greater degree than ever before. Further, the gradual development of a consciousness of his interests and ambitions on the part of the worker and his advocates brought the beginnings of free public education. Along with these general intellectual and cultural advantages of the Industrial Revolution went a number of serious disadvantages. The nervous strain of the urban age was far greater than that of the earlier and simpler life of the country. Culture tended to become standardized in terms of the machine technique. To a certain extent, in enslaving the machine, man was himself brought into bondage to the economic and social system which the machine technology created. The laborer became to a considerable degree merely a cog in the great industrial machine.

The political life of Europe and the world was greatly modified by the Industrial Revolution. The middle class became all-powerful in the era of the industrialized state,

and provided for adequate political protection of their interests through legislation based on the sanctity of property rights and parliamentary and constitutional government. But their ascendancy was soon challenged by the rising proletariat, whose partial successes in political participation have created what we have to-day of modern democracy. The development of the modern mechanism for transmitting information made it possible for citizens of each of the great national states to feel and think alike, as a result of subjection to common stimulation. In this way, the popular aspects of nationalism and patriotism, which had been initiated by the French Revolution, were now made relatively permanent and enduring. Finally, the greatly increased productivity brought about by the new machine technology and factory system led to the search for new colonies and markets in oversea areas. This movement we speak of in history as modern national imperialism.

III. WHY THE INDUSTRIAL REVOLUTION CAME FIRST IN ENGLAND

In a large sense, the Industrial Revolution first developed in England rather than on the Continent, primarily because England had been most thoroughly affected by the divers results of the Commercial Revolution. In the first place, the medieval system of industry, as carried on under the guilds, had earliest broken down in England. Here it had practically disappeared by the middle of the sixteenth century, having been supplanted by the domestic or putting-out system. The rigid organization of the guild system was not well adapted to the introduction of a new type of technique or to the large-scale organization and discipline of labor. The putting-out system broke down the power of the guild to maintain the existing status of industrial technique and organization, and made it much easier to introduce mechanical processes and the factory system. The disappearance of the

gild system in England was but one phase of the greater degree of development of economic freedom, liberty and initiative in this region as compared with continental countries.

There was also far greater abundance of surplus capital in England awaiting investment in the new industrial enterprise than was to be found elsewhere. This was due primarily to the fact that by the middle of the eighteenth century England had become far the most important commercial state in Europe. It had developed a great merchant marine and was coming more and more to control the markets of the world. This mercantile expansion and the accumulation of capital not only made possible investment in industrial enterprise, but stimulated the desire for such types of investment, because of the fact that, with the ever-expanding markets, there was need of a more cheaply produced and more adequate supply of commodities.

Then there was also a much greater abundance of free and fluid labor in England than elsewhere. Serfdom had disappeared at a much earlier date in England than upon the Continent. England had welcomed the immigration of French Huguenots after 1685. Above all, the enclosure and engrossing of land, which was carried on in England after about 1740, ousted great numbers of the peasants from their insecure holdings and created an army of unemployed, who furnished every-ready feeders for the new factories. Again, England was amply supplied with water-power, with large reserves of coal and with some iron ore. These were all indispensable to any country which was to develop the textile and the iron and steel industries. Even atmospheric conditions were well adapted to the processes of the new era because the damp climate of England was unusually well suited to the processes of the textile industry.

Further, the leading English manufactures of 1750 were, in the main, staple products which were easily adapted to the new mechanical processes of manufacturing. Particularly was this the case with English textiles, which had become

specialized on a fairly rough type of cloth, readily produced by mechanical methods. This was in marked contrast to the finer goods made in France, which have partly prevented the thoroughgoing reduction of French manufacturing to a mechanical basis even to our day.

English scientific activity was peculiarly well related, by its orientation and achievements, to the needs of applied science, technology and industrial invention. While not ignoring the remarkable earlier English contributions to pure science, it has long been pointed out by historians of science that English scientific activity in the eighteenth century had shown a remarkable practical bent, as compared with the concentration upon pure or abstract science on the continent of Europe. English science lent itself to the advancement of the new technology which was to be the most important initial phase of the Industrial Revolution. An excellent illustration of this is to be seen in the experiments on latent heat, which had been carried on by Joseph Black and were the basis of the important achievements of James Watt in perfecting the earliest form of the true steam-engine.

England's political, legal and military situation was likewise favorable to the introduction of the economic age. She had developed the basis of representative government and Parliamentary supremacy at least a hundred years earlier than France. The merchant classes had become able to control political policy and adapt both domestic institutions and international relations to the service of commerce. Arbitrary royal interference with economic activities and personal property rights had been successfully terminated by 1689. Excessive and unjust taxation, contrary to the wishes of the voting classes, had been very greatly reduced. Laws had been passed guaranteeing the security of property and the freedom and sanctity of contract. A large degree of freedom in industrial and commercial action had been secured. The average English investor was, in general, free to make the best possible use of his commercial and industrial sagacity

and foresight without fear of political interference. Even international relations and diplomatic policy had long been colored by economic and commercial considerations. One of the chief reasons for the Revolution of 1688 was that James II was shaping English foreign policy in the interests of the advancement of Catholicism, instead of adapting it to the needs of the British commercial groups. By the first half of the eighteenth century, however, Walpole was directing English foreign relations almost entirely in the interests of the English investors and merchants, and his precedent was widely followed thereafter.

Finally, the general state of political, diplomatic and military affairs which involved Europe from 1794-1815 was as favorable to industrial development in England as it was fatal to economic expansion on the Continent. The revolutionary and Napoleonic wars, which ravished the continent of Europe and laid waste wide areas, did not reach English soil, in spite of the most vigorous efforts of Napoleon. English industry, then, was untouched by the military aspects of European history during this significant generation. On the other hand, the military situation in Europe greatly stimulated British industry by producing a new and extensive market for British manufactured products in both the textile and iron industries. This was one of the most important forces in hastening the development of the Industrial Revolution in England. It was, in part, out of recognition of this favorable reaction of the European wars upon English industry that Napoleon attempted to ruin England economically through the initiation of his Continental System, designed to keep English products from the European markets. It was the English industrial activity and the profits flowing therefrom which, as much as anything else, made it possible for England to back the anti-Napoleonic coalitions and to push the wars against Napoleon to a successful conclusion. There is much truth in the remark of Professor Shotwell that "the wars against Napoleon were

not won at Leipzig or Waterloo, but rather in the cotton factories of Manchester and the iron mills of Birmingham."

We are, of course, aware of the work of Henri Sée and certain other continental economic historians which has shown that the priority of England in the Industrial Revolution was not so unique and absolute as certain of the earlier English economic historians would have had us believe. Nevertheless, it can safely be held that the general conception of the pioneer work of the English in this great transformation remains substantially correct, requiring only occasional qualification in detail.

IV. THE NEW TEXTILE MACHINERY AND PROCESSES

First to be put on a thoroughgoing mechanical foundation was the textile industry in England, particularly the cotton branch. The manufacture of cotton goods in England goes back as far as the beginning of the seventeenth century, having probably been introduced by Flemish immigrants. Gradually it had been expanded and put upon a semi-capitalistic basis. The spinners and weavers had come to be more and more specialized in their labor in the cotton industry and devoted their entire attention to this type of manufacturing. In many instances, there seems to have been some introduction of the central shop system in cotton manufacturing before 1760. Therefore, the provision of mechanical methods of spinning and weaving cotton cloth were simply the culmination of important developments in that industry running over a century or more. They were part of a general continuous development and improvement in the technique and organization of cotton manufacturing.

Speaking in a broad general way, the processes which prevailed in the textile industry in England in the year 1700 were not widely different from those which had existed in Egypt as early as 5000 B. C. In fact the general principles of the methods of spinning and weaving in vogue in England

at the opening of the eighteenth century had been mastered by the Lake Dwellers of Switzerland and northern Italy possibly as early as 10,000 years B. C.—the spinning-wheel being the only important innovation in the interval. The recent revelations of the textile industry in predynastic Egypt have shown that the Egyptians were able to weave a linen cloth so fine that it can be distinguished from silk only by the use of a reading-glass.

To confine ourselves to the technique for the manufacture of cotton cloth in 1700, it should be pointed out that, in the first place, the cotton fiber was prepared for spinning by a tedious hand process of removing the seeds and tearing, sorting and picking over the fiber. The spinning was done by the crude spinning-wheel, a medieval invention which was only a slight improvement over the old spindle, which comes down from the Stone Age. The hand-spindle was, in fact, widely used in Europe in 1700 and is still to be found in certain backward parts of southern and eastern Europe. The weaving was done on the hand-loom, which also had an antiquity of thousands of years. The yarn which had been prepared on the spinning-wheel was arranged in parallel lines lengthwise on the loom and was known as the warp. The cross-threads, the weft or woof, were then worked in as follows: every other thread in the warp was fastened to a cross-bar, so that they could all be drawn back at once and the shuttle containing the woof fed through. Then the other half of the warp threads were drawn in the opposite direction and the shuttle returned. The woof had also to be crowded close together in order to give a solid compact cloth. This was a very slow and unsatisfactory process and required a vast amount of hand labor. After the cloth had been woven, it was finished and dyed by another set of employees. Only in the dyeing process had any important advances been made for centuries, and the improvements in this line were due primarily to the new sources of vegetable dyes which had been discovered in the areas oversea during

the period of European expansion. Broadly speaking, it is safe to say that the textile industry at the opening of the eighteenth century was not materially different from that which had been in operation for thousands of years.

The first important break with traditional methods appeared in the invention of the so-called "flying-shuttle" by John Kay, a Lancashire weaver, in 1738. This was an automatic spring-propelled shuttle, which carried the woof back and forth through the warp with no other attention than that needed to release it for each trip across the warp. Kay's invention decreased to a marked degree the amount of human attention necessary in the weaving industry. As a matter of fact, by 1730 the weavers had already been able to work somewhat more rapidly than the spinners, and were often waiting for an adequate supply of yarn. Kay's invention created an even greater need for improved spinning methods. Ambitious inventors were not wanting in the effort to provide this all-essential new spinning machinery. In fact, Wyatt and Paul were attempting to devise a satisfactory spinning machine at about the very time that Kay had perfected his flying-shuttle. Though they were unable to work out a sufficiently successful machine to revolutionize the spinning industry, their labors unquestionably prepared the way for the notable advances which were made following the invention of the spinning-jenny.

The first fairly successful automatic spinning machine was the so-called spinning-jenny, which was invented by James Hargreaves about 1764. The story goes that Hargreaves noticed a spinning-wheel continue to revolve after it had been tipped over, the wheel then turning in a horizontal plane. This led him to perceive that it would be possible to turn a number of spindles with a belt propelled by one wheel. Consequently, he devised a machine which, in its first important model, turned eight spindles, thus increasing approximately eightfold the efficiency of the old spinning-wheel. Before his death, Hargreaves had increased the num-

ber of spindles which might thus be turned from eight to eighty. Hargreaves' machine was light and easy running, but it had one fatal defect, namely, that the yarn which was thus spun was coarse and loose and required a mixture of flax with the cotton.

The next important addition to the technique of mechanical spinning was embodied in the "water-frame" of Richard Arkwright. It appears that no credit should be assigned to Arkwright for this invention, the original model having been made by a clock-maker named Kay, at the suggestion, and under the supervision of a mechanic by the name of Highs. Arkwright appropriated this invention, financed it and made it a practical success about 1769. It had two sets of revolving rolls, the second set moving more rapidly than the first, thus pulling out the fiber and tightening it before it was wound in the yarn. This made a much tighter yarn than could be produced by the spinning-jenny, but still rather coarse. The term water-frame was derived from the fact that it was so heavy and cumbersome a machine that it could not be turned by hand, as was the case with the spinning-jenny, but required water-power to run it. Another phase of the improvement embodied in the water-frame lay in the fact that it would make yarn out of pure cotton fiber, instead of requiring the mixture of flax that was essential to the yarn made by the spinning-jenny.

Yet the water-frame was not the machine which was to create the future of the cotton industry. What was needed was a machine which would twist fine, hard and smooth yarn in one process. This all-important innovation was the work of Samuel Crompton, who produced his famous spinning-mule in 1779. It was essentially a combination of many of the better features of the spinning-jenny and the water-frame, and the term "mule" was descriptive of its hybrid origin. Not only was Crompton's mule easier to operate than the water-frame, but it also provided, for the first time, the possibility of making by mechanical processes a type of

yarn which was both hard and fine. It provided a duplex process of pulling and twisting the fiber before it was wound on the spindles as yarn. With certain subsequent important modifications Crompton's mule has remained one of the most significant and widely used of the mechanical spinning machines from his day to our own.

By 1780 these innovations of Hargreaves, Arkwright and Crompton had supplied the all-essential need for more effective methods of spinning yarn and had put the spinners further ahead of the weavers than the weavers had been in advance of the spinners in 1735. None of the inventors was adequately rewarded for his inventions. Crompton did not patent his mule, and greedy and unscrupulous manufacturers took it over without giving him decent remuneration or royalties. It was not until 1812 that Parliament, as the result of proved personal necessity, finally granted him a pension of five thousand pounds. Arkwright became a very wealthy man because of his work as a promoter of the new cotton industry. As we shall see later, he was the most important of the early capitalists who established the factory system on the basis of these technological improvements in the textile industry. Those who really supplied the inventive genius lying behind the water-frame received practically nothing.

In order to bring weaving up to the level of efficiency which had been attained by the spinners, it was necessary to provide an adequate mechanical loom. Doctor Edmund Cartwright, a mathematically inclined English clergyman of Kent, devised a power-loom as early as the spring of 1785, but did not perfect his device until 1787. As a matter of fact, his great contribution was to furnish the indispensable foundation upon which improved and thoroughly practical looms could be constructed. The chief defect of the Cartwright loom was its clumsiness and the fact that it did not provide for an adequate dressing of the warp. These defects were largely eliminated through the ingenuity of Radcliffe

and Horrocks in the first decade of the nineteenth century. Neither Radcliffe nor Horrocks was able, however, to finance the device, and the first extensive marketing of the improved loom was carried out by Sharp and Roberts, who successfully marketed the Horrocks loom as early as 1822. This date is of very great significance in the textile industry, because it marked the period in which hand-weaving began to be successfully and inevitably supplanted by mechanical processes. Improvements in the mechanical loom have, of course, continued down to our own day, the most notable early advance being the Kenworthy and Bullough loom, which was brought out in 1841. The successful provision of power-weaving machinery now put the weavers on a parity with spinners and raised the textile industry to a thorough-going and successful mechanical basis.

An important type of cloth made during this early stage of the Industrial Revolution was calico, which was disposed of particularly in the warm climates. At first its manufacture was retarded because of the slow process of stamping the colors by hand blocks. In the latter part of the eighteenth century the method of printing calico by means of designs cut upon the surface of a revolving cylinder was introduced. This not only stimulated the calico industry, but also furnished the basis for the suggestion that later grew into the rotary printing-press.

It should be borne in mind, however, that the new spinning and weaving machinery could not have been widely exploited had it not been for a very important invention on this side of the Atlantic, namely, the cotton-gin, which was first made a success by Eli Whitney in 1792. Down to this time, the only method which had been known for separating the cotton seed from the fiber had been hand picking, a very slow and laborious process, which rendered the fiber too expensive ever to have made the cotton industry a paying outlet for investment. Whitney invented a machine in which a cylinder equipped with spikes rotated through a bed piece

furnished with spikes set in rows meshing with those on the cylinder. By feeding the fiber into the revolving toothed cylinder, it was possible by mechanical methods to separate the seeds and to produce relatively cheap cotton fiber. It was not until nearly a century after Whitney's time that the cotton growers in the South learned that those cotton seeds possessed great commercial value in the making of various types of cattle food and oil products. Commercial chemistry has still further increased their value and uses. The cotton-gin worked a revolution, not merely in the cotton-manufacturing industry, but also in the cotton-growing industry. In 1791 the United States exported but two hundred thousand pounds of cotton; by 1800 it was exporting two million pounds, and the amount grew progressively. By 1860 the average annual exportation of cotton had risen to one billion, three hundred eighty-three million pounds. It was this which made the South specialize in the cotton branch of the agricultural industry and did more than anything else to revive the declining enthusiasm for negro slavery.

The textile industry in a mechanical form gradually established itself in the United States between 1790 and 1825. The first important figure was Samuel Slater, born in England in 1768 and apprenticed to a partner of Richard Arkwright. He escaped, came to the United States, and about 1790 opened a cotton-mill in Pawtucket, Rhode Island. He had to construct his machinery from memory of the machines he had used in England. In 1803 his brother brought from England the plans of one of the improved Crompton mules, and introduced this into the Slater factory. Slater never attempted to weave cloth, but limited himself to the making of yarn.

The next important figure in American textiles was Francis Cabot Lowell, who established the first textile factory in the United States that carried on both spinning and weaving by mechanical methods. This factory he opened at Waltham, Massachusetts, about 1813. His master mechanic,

Paul Moody, made many additions to the machinery as originally copied from British models. He extended his operations to Chalmersford in 1822. The name of the town was soon changed to Lowell. Here Lowell specialized in calico, having brought the process of cylindrical printing of calico from England. Lawrence was started by Daniel Saunders, the town being originally named Merrimac, but later changed to Lawrence in 1848. It was so named after Abbott Lawrence, a prominent manufacturer who had moved over from Lowell. Fall River was started in 1811 by Colonel James Durfee, and in 1846 the first factory was established at New Bedford as an offshoot from Fall River. In this textile aristocracy of the first half of the nineteenth century in New England one detects the source of the intellectual, educational and political aristocracy in eastern New England—the Abbotts, Lawrences, Cabots and Lowells—who succeeded to the shoes of the Adamses, Websters and Sumners, and it is a revelation which can not be overlooked in tracing the psychogenesis of the Lowell Report on Sacco and Vanzetti in the summer of 1927.

Another leading center of the early American textile industry was the upper Mohawk Valley in the region about Utica, New York. The industry in Utica was founded in 1807-08, by Benjamin Wolcott, Jr., the son of one of Slater's working men.

The earlier phases of the textile industry on a mechanical basis were limited chiefly to cotton and linen cloth, but mechanical methods were gradually applied to the making of woolen clothing. A great impetus to the manufacturing of woolen and worsted clothing by mechanical methods came in the decade of the American Civil War, when the supply of raw cotton was shut off, due to the northern blockade of the cotton-raising states.

The textile industry was both modified and stimulated by the development of mechanical methods in the clothing industry after the invention of Elias Howe's sewing-machine

in 1846. This greatly facilitated the mechanization of the tailoring industry and, together with the growing population, notably increased the demand for textile products.

Howe's sewing-machine not only helped on the textile and clothing industries, but was also applied to the revolution of the boot and shoe industry. By 1851 the sewing-machine was adapted to the manufacture of the uppers of shoes, and in 1864 the Gordon-McKay machine was devised for sewing the uppers to the soles. This was supplanted after 1870 by the Goodyear welt machine which, with subsequent improvements, has remained the machine used for this purpose to the present day. The progress of the shoe industry since 1860 is well illustrated by the fact that in 1860 a factory that made three thousand pairs of shoes a year was considered a large plant, while to-day a single factory often turns out seventy-five thousand pairs of shoes each day during the rush season.

While the earliest machines were those employed in connection with the textile industry, the types and volume of machines were quickly extended to an almost unbelievable degree. The "empire of machines" added to its domain the new engines, the machinery involved in making iron and steel, the new mining machinery, and, ultimately, machinery for making other machinery. As mechanical processes expanded, it became evident that it would be of great economy and convenience to have machinery made with standardized parts, so that broken parts might be ordered from the factory. The initial step in this direction was taken by Eli Whitney in the manufacture of muskets.

V. THE SOCIAL IMPORT OF THE MECHANICAL AGE

Every generation during the last century has imagined itself to have attained approximate finality in the development of the mechanical technique. Our generation, due to the remarkable introduction of mechanical devices into ev-

ery phase of life in the last two decades, might perhaps be forgiven for special assurance on this point. Yet it is likely that we are to-day only in the beginning of the mechanical age, provided man is able to show sufficient inventiveness in the institutional field to allow him to operate successfully the revolutionized type of life which his machines inevitably create.

In his striking article on "The Empire of Machines" published in the *Yale Review* for October, 1922, Professor John Maurice Clark has stated in profound and trenchant fashion some of the more important social and cultural implications of the coming of the machine era. We can quote but a few of the more relevant paragraphs from this remarkable analysis:

The fact is that humanity is suffering in the grip of forces beyond its control and of purposes not its own. There is a form of life on earth which is already giving man the "darn good lickin'" he has been inviting. It does not threaten our physical life; but it does threaten our supremacy, our freedom of will, and our control of our own destiny. It is driving man, lashing him onward at a racking pace towards some goal which he cannot even foresee, let alone choose for himself. Men speak of this form of life often. They call it "industrialism."

And where lies the vital principle of industrialism? With man, replies the Practical Man. It is the child of his brain, with all its qualities and defects; it is the extension of his dominion over nature through his new servants, science and machinery. True in part; yet servants have become masters before now, and modern industrialism is not anything man foresaw or desired. It is what it had to be to conform to the racial needs and life processes of the machines. The more the historians learn the true significance of events, the more do machines crowd persons out of the places of prominence. What great birthdays do the historians of industrialism celebrate? The birthdays of the spinning jenny, the power loom, the steam engine, the steamboat, the locomotive, the telegraph. Industrialism is their work. And what

is the human rôle of highest economic note? That of mid-wife at the birth of one of these new mechanical species.

We have brought into existence a race of monstrous beings, as indeed Samuel Butler has shown us; beings whose powers are vastly beyond our own in many respects, and whose natures, needs, and behavior are utterly foreign to ours. Such life as they have we gave them, but are we now free to take it away? They could not carry on their life processes for a day without our help, but is that help a thing we have the option to withhold? If the test of non-coöperation were carried to the bitter end, it is true, the machines would perish utterly, while humanity, some starved and plague-ridden remnants of it, would survive. But not even Bolshevik Russia has the fortitude to back its principles to this extent; in such a test men and not machines would be the first to capitulate. . . .

The machines originally made bargains with man, in which they offered him things he much desired, and in exchange bound him to serve and maintain them, to eliminate the unfit among them and promote their racial progress, and to alter his own social and political arrangements in whatever ways might be necessary in keeping pace with the increasingly complex social organization of the machines themselves, and in keeping the children of man faithful to the service the machines require. The full nature of the terms of these bargains was not, however, revealed to man at the first. Some of the terms became evident only after generations had passed, and of some we cannot yet be sure. . . .

As men grow more dependent on machines, the machines become able to rule by penalties as well as by rewards: witness our war-time heatless Mondays and the actual terror inspired by any prospect of a tie-up of the railways. Or witness more eloquently the present condition of Russia. We are penalized not merely for neglecting the machines but for failing to promote their growth and development with satisfactory rapidity. From some of these punishments there is no escape, and the man or woman who has to trust to the tender mercies of the New York subway in the rush hours has good reason to feel like a child whose parents whip him every day, not because he has been bad, but simply to keep his spirit properly chastened and submissive. . . .

What is to be the outcome? The most peaceable way would be to submit and let biological selection weed out those unfitted to a mechanical environment. As primitive man adapted himself to the jungle, so modern man would adapt himself to the jungle he has himself created. First to go would be those whose natures so revolt at a day of factory labor that they are left in an unstable state of feeling and will, while their cramped impulses seek morbid outlets. Numbers of people of this kind could find employment in the higher sorts of intellectual and creative work, but the rest would have to be eliminated. We might try out Mr. F. W. Taylor's suggestion that a trained gorilla could do some kinds of monotonous work better than a man; and if the experiment succeeded, let the gorilla relieve man of all such tasks. However, Mr. Taylor probably did the gorilla an injustice. Man's nature is doubtless easier to subjugate after all. As for those who are cursed with an ambition to grow all their lives into more effective, larger, and worthier work, they must be removed except such of them as could find a place in the small percentage of responsible managerial positions, or other unstandardized pursuits. It seems possible that those who need the support of religion to lead good and happy lives might also have to be eliminated, owing to the subtle incompatibility between mechanical ways of thought and the imagery which seems an integral part of religious belief. On this point, however, it may be premature to dogmatize.

The race of men would then become differentiated. The upper classes would be much as they are now, but more effective. They would "govern" the masses, transmitting the will of the machines to them unhampered by any need of making concessions to ostensible democracy. For the rest, the world would be peopled with those whose natures find adequate fulfilment in the patient performance of standardized jobs, in moving-pictures, in houses of standard models, preferably poured out of concrete, and in Grand Rapids furniture. These represent, so far as we can observe, the æsthetic taste of the machines, which they seem destined to impose upon us as we impose ours on inferior peoples, educating them to the beauties of stovepipe trousers, chimney-pot hats, and other advanced articles of adornment. . . .

But we need not be unduly downcast. After all, it is our

own works that threaten us. We human beings have made a new world and have placed in it a new race of beings with purposes independent of our own. If we could rule the wills of these new beings, shape the destiny of this new world, we should be no longer men, but gods—*dei ex machina*! Is that one of the possibilities?

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CHAPTER IV

THE REVOLUTION IN POWER, TRANSPORTATION AND COMMUNICATION

I. THE NEW POWER

1. *The Steam-Engine*

WITH the provision of the new mechanical spinning and weaving machinery and the cotton-gin, the mechanical foundations of the textile industry had been thoroughly laid. An indispensable element in the new mechanical technique was the discovery of more adequate motive power for the new machinery where natural water-power was not available or commercially feasible. Water-power has been, and still remains, the best of all types of motive power where it is available in a form practicable for manufacturing purposes. Unfortunately, sufficient water-power is not everywhere available to run all the factories which a country may readily provide and support. Again, there is often excellent water-power in regions so remote from raw materials or markets as to make it too costly for use. Only in our own day has it become possible to exploit water-power and transport it in the form of electricity to districts where factories may be economically established.

The first notable form of motive power supplied for those factories where water-power was not available was the steam-engine, which owes its practical application to the Scotch inventor, James Watt. Apparently, the first development of the principle of the steam-engine should be assigned to Hero of Alexandria (Egypt), who had provided a crude sort of engine as early as 200 B. C. Hero did not make any

practical commercial application of his invention, though he did utilize it for the amusement of royalty by hooking it up to a rope through a series of drums, thus opening and closing the temple doors. In the seventeenth century an Italian, Giovanni Branca, and an Englishman, Edward Somerset, had revived a knowledge of Hero's device. The first important innovation, however, lying in direct line of ancestry to Watt's steam-engine, was the steam digester which was devised by Denis Papin (1647-1712), a professor of physics in the University of Marburg. About 1690 Papin invented a device whereby steam was generated in a cylinder, which had one end open. When the expanding steam was generated, it would raise the piston to the top of the cylinder. The fire was then put out and the cylinder cooled by pouring on water. This condensed the steam, generated a vacuum under the piston, and the pressure of the atmosphere pushed the piston back once more to the bottom of the cylinder. The fire could then be rebuilt, steam generated once more, the piston raised to the top of the cylinder and the process of condensation repeated. It will be seen that the real power thus generated was produced by the pressure of the atmosphere rather than by steam, the steam being utilized solely to provide a vacuum against which atmospheric pressure might successfully work. Papin's engine was, then, the first of a series of atmosphere-engines that held the field until the time of Watt.

An Englishman, Thomas Savery, about 1702, worked out the idea of a separate boiler in which the steam could be generated and rendered permanently available. Thereafter it was possible to keep the fire continuously burning under the boiler, and thus a great saving was introduced, as compared with the old and expensive method which Papin had employed of putting the fire out each time that the steam was condensed to form the vacuum. The Savery engine had no piston and was, in reality, an atmospherically propelled pumping device. The first important commercial applica-

tion of the Papin piston engine with the Savery boiler was the work of Thomas Newcomen, who worked out this combination about 1705. A lazy boy employed about one of the Newcomen engines devised an all-important invention whereby an automatic device was applied for opening and closing the steam valve in this process of raising the piston, condensing the steam and allowing the atmosphere to return the stroke of the piston. This was the highest development which the atmosphere-engine reached, and it was the Newcomen engine, rather than his mother's teakettle, which furnished the incentive and suggestion for Watt to transform the atmosphere-engine into the true steam-engine.

James Watt as a young man was a mathematical instrument-maker, employed in the University of Glasgow. He had remarkable mechanical ingenuity and no little scientific interest and competence. He had been something of a student of physics and chemistry, and had worked with Doctor Joseph Black in his notable investigations which led to the discovery of the theory of latent heat. It was this which furnished Watt with the scientific background for his invention of the steam-engine. The other set of impulses came from the actual problems arising in his profession as an instrument-maker in the university. In 1763, while repairing a model of Newcomen's engine, he came clearly to perceive the enormous waste of fuel and energy in the atmosphere-engine, due to the necessity of an excessive and repeated heating and cooling of the cylinder. In attempting to solve this problem, Watt hit upon the scheme of closing both ends of the cylinder and applying steam to force the piston back and forth in the cylinder, instead of relying upon the atmosphere to furnish the real element of power in the engine. This idea apparently dates back to 1765, and by 1769 he had taken out his first patent for a successful steam-engine. From now on the power in the engine was supplied by steam, and there was no longer any waste coming from the necessity of cooling the cylinder with each stroke of the piston.

It was years before the invention could be made a commercial success. There were no lathes for accurately turning the parts, casting was still a crude process, and the mechanics of the time doubted if it would ever be possible to build such large complicated machines. Through a bankruptcy of the original firm, Watt was fortunate in getting as a partner Matthew Boulton whose experience in manufacturing mechanical toys proved invaluable in solving a myriad of practical problems. Even with present-day mechanical engineering knowledge it is often a long way from a small, soft-metal model, embodying the idea of a machine, to the full-sized, commercially practicable machine itself. Boulton also supplied the necessary financial backing to market the engines successfully. By 1785 they were being introduced into factories, and by 1800 were very extensively used for pumping and for propelling the new textile machinery.

While the great contribution of Watt to the development of the engine lay in the transformation of the atmosphere-engine into the steam-engine, he also made two other important innovations. One was the automatic governor, which maintained an even speed by regulating the flow of steam into the cylinder, adjusting it with mechanical exactness to the pull of the machinery. The other significant advance was the transformation of the crude alternating beam device, used in the earlier pumping engines, into the crank and shaft arrangement, which adapted the engine to the task of turning shafts equipped with any number of belt-wheels. With the exception of the provision of more complicated condensing chambers and the addition of more than one cylinder, there was no important advance beyond the general principles of Watt's steam-engine until the appearance of the modern turbine, more than a century after Watt had taken out his first patent.

The steam-turbine was a revival, in improved form, of the first form of steam-engine invented by Hero. The steam is applied, not to a piston, but to a series of revolving blades

turning in a large cylinder. These blades always turn in the same direction, and there is no loss of energy through the necessity of a reversal of motion, as in the pistons of the reciprocating engine. But the greatest advantage of the turbine construction lies in the fact that it furnishes a smooth pull without the use of a heavy fly-wheel. Its light weight and freedom from vibration have adapted it particularly to use in steamships. The first important patents were taken out by Sir Charles A. Parsons and Gustav de Laval in the 'eighties of the last century. Parsons' turbine is the one which has been most generally adopted because of his scheme for reducing the speed of rotation of the blades so as to make it possible to drive machinery directly from the turbine shaft, without the necessity of "gearing it down."

2. *The Internal-Combustion Engine*

The earliest anticipation of the principle of the internal-combustion engine was made in 1680 by the distinguished Dutch scientist, Christian Huyghens, who invented an engine the piston of which was raised by the explosion of gunpowder in the cylinder. Huyghens' device was of scientific interest but of no commercial significance. The engine of Otto and Langen, operated by the explosion of gas within the cylinder, was put on the market in the decade of the American Civil War. The subsequent developments of the gas-engine have been very closely associated with the progress in the application of electricity and the discovery and exploitation of the petroleum industry. Down to the present time much the most important internal-combustion engine has been the gasoline-engine, in which the power is produced by the explosion of gas within the cylinder by means of an electric spark carefully timed to the movement and position of the piston. The gas itself is formed by a mixture of air and gasoline in a device known as a carburetor.

The chief weakness of the modern gasoline-engine lies in

the expensiveness of the gasoline, and there have been many attempts to utilize cheaper fuels. The most successful achievement in this direction thus far has been the Diesel engine, which was invented by a German scientist, Doctor Rudolph Diesel, about 1897. The Diesel engine uses much heavier and cheaper oil, which is introduced into the cylinders in the form of a spray and ignited by the heat of highly compressed air. This engine has proved unusually successful in marine service and has rapidly supplanted even the steam-turbine in many out-of-the-way places. As over against the ordinary gasoline-engine, it has the great advantage of cheaper fuel, and as compared with the steam-engine, it requires much less space on the ship because no boilers are necessary. A smaller crew can operate a Diesel-equipped boat of like tonnage, and the expense of keeping the ordinary ship under steam at all times is avoided. While the Diesel engine has thus far been utilized chiefly in connection with navigation, there is no reason why it should not be adapted to manufacturing processes. Its wide use in submarines during the World War has stimulated experiment, and various new models have been brought out, especially in Germany.

3. *Electric Power*

The last, and in some ways the most striking, phase of the development of motive power has been connected with our growing knowledge of methods of generating and utilizing electricity. Thanks to the work of great physicists such as Galvani, Volta, Benjamin Franklin, Faraday, Kelvin and others and the practical application of their researches and achievements by such men as Westinghouse and Edison, it is now possible to generate electricity in the regions where water-power is available and to conduct it over high-tension wires for hundreds of miles to areas which are well located to serve as manufacturing and commercial centers. In this

manner modern science is overcoming the natural obstacles in the way of the utilization of water-power remote from suitable industrial areas. As soon as some ingenious inventor is able to provide a method of conducting electrical currents over great distances without a serious waste in transit, there seems little question that in most modern states electricity will become by far the most important type of motive power. Already many countries which are defective in their supply of coal for steam-power or of petroleum for the internal-combustion engine are taking vigorous steps to exploit their water-power resources for generating electricity.

II. THE REVOLUTION IN TRANSPORT

1. *Highways*

Another important phase of the development of the Industrial Revolution was the improvement of transportation facilities. During their occupation of Gaul and England, the Romans had built a system of remarkable roads radiating throughout western Europe, and these had sometimes been the only thoroughly passable routes of communication during the medieval period. These roads had, however, progressively deteriorated, so that by the seventeenth century there were no highways in England which would be regarded as even tolerably good to-day. In the third chapter of his *History of England* Macaulay presents the classic, if somewhat exaggerated, description of the English roads at the time of the seventeenth-century Stuart Restoration. These were little if anything more than trails, the coaches requiring a large number of horses and traveling at an unbelievably slow speed. Not only were the physical conditions of travel extremely bad, but the matter of personal safety was by no means assured, the roads being as dangerous from robbers as were the mountain highways of the western United States in border days. This intolerable con-

dition of the highways greatly obstructed any extensive development of internal commerce in England, the little that existed being carried on chiefly by means of pack-horses. While, as Gibbins and others have since pointed out, it is probable that Macaulay somewhat exaggerated the bad condition of the English highways, yet we get a very similar picture of conditions a century later from the writings of Arthur Young, who probably traveled more widely in England than any other man of his generation.

The first determined attempt to improve the English highways is associated with the series of "turnpike acts" passed following 1663. These acts authorized individuals, corporations and communities to build highways as a commercial enterprise. Those who built roads were to be indemnified by the privilege of levying tolls. While there were many of these turnpike acts passed during the seventeenth and eighteenth centuries, this policy achieved little in the way of positive and permanent results. This was due primarily to the fact that after the roads were constructed, those who had built them showed a far greater interest in collecting tolls than in keeping the highway in repair. The well-nigh complete failure of the English turnpike acts to achieve their ostensible purpose is well revealed in the vigor of the language employed by Arthur Young to describe the English road system at the close of the eighteenth century.

The real initiation of scientific road-building in England is associated with the work of two Scottish engineers, Thomas Telford (1757-1834) and John Macadam (1756-1836), though Napoleon and others had built wonderful through highways on the Continent. The principle followed by Telford and Macadam was essentially the same, namely, a careful preparation of the road-bed, so as to allow adequate drainage by the use of gutters before the final surfacing of the road was applied. The earlier roads had usually been built by simply scraping or digging a passageway through the countryside without any adequate provision for

drainage of the moisture from the center of the road. As a result the roads usually were reservoirs for the accumulation of moisture, more like ditches than roads at certain seasons. The chief difference between the Telford and Macadam methods was to be found in the type of surfacing employed. Telford utilized a modification of the old French method, namely, the building of a road by means of a series of heavy flagstones laid side by side and bound with pitch. On this foundation, a surface was formed by the addition of smaller stones, carefully selected and rolled smooth. The chief difficulty with the Telford road was the relatively great cost of construction.

Macadam improved upon the Telford system by providing a road surface through laying down a series of stone coatings, beginning with very large cobblestones on the bottom and approaching the surface with a progressively finer type of stone which culminated in a dust surface on the top, the road being rolled smooth and hard. On account of the greater simplicity and cheapness of the Macadam construction, the so-called "macadamized" road furnished the model down to our day, when it has been in part displaced by asphalt and concrete. While there was a notable improvement in highways in Europe and America during the nineteenth century, the greatest force producing a movement for a more general prevalence of good roads has been the general introduction of automobiles since 1900. The present tendencies in road building for hard and continuous wear by motor vehicles, especially heavy motor trucks, suggests that ultimately the macadamized road will be supplanted by concrete highways.

2. Canal Building

Much more significant in a commercial way in the earlier days of the Industrial Revolution in England was the development of canal construction. The art of canal building is

very old in human history: the Babylonians had an elaborate system of canals in the third millennium before Christ, which were employed for transportation, irrigation and defense. In the second millennium the Egyptians constructed a canal connecting the Red Sea with one of the mouths of the Nile, thus anticipating the Suez Canal by more than three thousand years. Extensive canal systems had appeared in Italy late in the Middle Ages and the ship canal connecting Lübeck with Hamburg also did heavy duty. In early modern times the French had made some progress under the direction of such statesmen as Colbert. It was not until the middle of the eighteenth century that any extensive development of canal building began in England.

The first important modern enterprises were promoted by the Duke of Bridgewater, who had been disappointed in love and sought solace in the development of the canal industry. His first significant achievement followed the passage of the earliest English canal act in 1759. This canal was one built from Worsley to Manchester, a distance of some seven miles. After this, canal building progressed rapidly in England, largely guided by the promoting enthusiasm of Bridgewater and made practically possible by the engineering genius of James Brindley. Brindley possessed no technical engineering training, having formerly been a millwright and being in some ways practically illiterate. He was a man of very great native genius, however, and probably had more success in the solution of elementary problems in canal building than any other single individual. Largely by ingenuity he solved some of the leading difficulties in canal building, such as the construction of locks, viaducts, tunnels and extensive cuts.

From 1760 to 1830 canal building was carried on with great enthusiasm in England, some three thousand miles having been constructed by the later date. In fact, there was, if anything, an excess of canals, considering the demand for transportation, and the oversupply of this particular type

of transportation facility led to a considerable number of failures, thus serving in large part to check the movement after this time. At the present time there are in England only some three thousand seven hundred miles of canals. The canals were extremely important in providing transportation facilities for heavier materials, such as coal and iron ore, which it was well-nigh impossible to transport on the miserable roads which existed at that time in England. There is no doubt that of all types of modern transportation facilities the canals were most intimately related to the early developments of the Industrial Revolution in England.

The first period of extensive canal building in the United States was that between 1820 and 1840. The greatest achievement was the building of the Erie Canal which was opened in 1825. The over-investment in canal enterprises was one of the chief factors bringing about the panic of 1837. From about 1840 onward there was a lull in canal building, but in the last generation there has been a considerable revival in the form of canals adapted to larger vessels, such as the Panama Canal and the New York State Barge Canal. There is now under discussion a deep-sea waterway from the Atlantic to the Great Lakes.

3. *The Railroads and the Growing Competition of Automobiles*

Neither roads nor canals provided any adequate method of rapid transportation of individuals or goods. This was achieved by means of the railroad, which, in its general significance, simply meant the application of the Watt steam-engine to the principles of locomotion and transportation. The railroads developed naturally and gradually on the basis of a number of previous achievements, both in the way of construction of the road-bed and the providing of a satisfactory type of power. The earliest anticipation of the modern railroad was to be found in the so-called "tramways" which

were introduced in Germany as early as the fifteenth century. The tramway was a device in which heavy square timbers were laid down in parallel rows with a distance between them equal to the gage of the ordinary cart or coach of the time. They were introduced at this early date in order to provide some method of escape from the miserable roads of the time, the timbers keeping the conveyance from sinking into the mud and becoming lodged there. The tramway was introduced into England in the eighteenth century, usually in connection with the transportation of heavy materials from factories and mines. Down to near the close of that century the English tramway continued to utilize timbers for the tracks, at best placing strips of iron on top to prevent excessive wear. Gradually, with the improved methods of making iron, iron tracks tended to supersede wooden ones and those made of a combination of wood and iron. In addition to the private tramways operated by miners, manufacturers and merchants, the practise developed of building public tramways, open to all upon the payment of a fee or toll. Carts and coaches on these public tramways were drawn by oxen, mules or horses.

The modern railroad was at first nothing more than the attempt to substitute the steam-engine for the horse, as the method of propulsive locomotion used. Almost synchronous with the appearance of the public tramway in England were efforts made by ingenious inventors to adapt the Watt engine to the requirements of an adequate type of locomotion. Among those who were successful in this effort were Richard Trevithick, William Hedley and George Stephenson. Stephenson completed his first reasonably successful locomotive as early as 1814, and in 1825 the first English railroad, the Stockton and Darlington, was opened. Trains were run at a speed of from ten to fifteen miles per hour. Stephenson assiduously devoted himself to the improvement of his engine, and by 1830 he had produced the famous "Rocket," which was able to make the unheard-of speed of some

twenty-nine miles per hour. Before the close of the 'thirties the London and Birmingham Railroad had been opened over a distance of some one hundred and twenty-five miles and was maintaining trains scheduled at about twenty-five miles per hour. The early English railroads were originally operated in a very simple manner after the method of the turnpikes and tramways, being rented to any person who wished to pay the tolls. This procedure soon proved utterly preposterous and impossible of execution, and gave way to the single, centralized, controlling and regulating agency. In due time the railroads were owned and controlled by a commercial company which supplied and operated its own trains and constructed and maintained its own right-of-way.

In the matter of perfecting the technique of railroad transportation, many important contributions were made by American engineers, who had to face new and more serious problems, due to the steeper grades and longer distances of North America. The English railroads had at first been built on approximately straight lines without any curves, and the trucks on the cars and locomotives had been rigidly attached. It was impossible for such a locomotive or coach to take a sharp curve, for any such attempt would have led to the shearing off of the trucks from the coach. The Americans found it necessary to build railroads with sharp curves and they solved this problem by providing the so-called swivel axle on the trucks which allowed the taking of sharp curves and, further, made it possible to build much longer locomotives and coaches than would otherwise have been possible. Another contribution lay in the making of the car wheel in the form of a section of a cone to enable it to take the curves more safely. Again, the English railroads had been built on a solid road-bed with the rails fastened to a series of piles driven into the ground. This was an expensive method and also resulted in a far greater amount of wear and tear on the rolling-stock. American engineers invented the scheme of providing a flexible road-bed in the form of transverse ties laid on a ballast bed, which was provided by

either gravel or crushed stone. This insured a relatively cheap type of road-bed and one which combined the necessary rigidity with sufficient flexibility to insure greater comfort to passengers and less wear upon the rolling-stock.

The latest development in railroad technique has been the appearance of electric locomotives. The electric locomotive is much cleaner, ever ready for service and also presents far less danger of starting fires along the right-of-way. The use of this type of power is bound to increase with the gradual exhaustion of the world's coal and oil supply. The electric car or trolley service has proved of great significance in urban and interurban transportation. It has reached the most complete development in the great metropolitan subways.

Along with the technical phases of the improvement of locomotives and the building of larger and safer cars, particularly the employment of steel in car construction, has gone a remarkable development of safety appliances. These have rested mainly upon the utilization of electricity for purposes of communication. The telegraph, telephone and the electrically operated signaling system, together with the air-brake and the automatic coupler, have made it possible to operate modern railroads with a reasonable degree of safety to passengers, operatives and freight.

The following statistics of American railroad development well illustrate the remarkable development of railroad enterprise in the last century.

RAILROAD MILEAGE IN OPERATION

1840	.	.	.	.	.	2,818
1850	.	.	.	.	.	9,021
1860	.	.	.	.	.	30,626
1870	.	.	.	.	.	52,922
1880	.	.	.	.	.	93,262
1890	.	.	.	.	.	167,191
1900	.	.	.	.	.	198,964
1910	.	.	.	.	.	249,992
1918	.	.	.	.	.	264,233

In our own day, the railroad is beginning to meet very serious competition in the form of the automobile truck. Present tendencies in the way of improvement of the motor-car and of the roads adapted for such traffic suggest that, for shipments of five hundred miles and under and confined to perishable or relatively light commodities, automobile trucking may prove a serious if not fatal competitor to railroad service. In passenger service, likewise, the railroads are now meeting heavy competition from automobile buses. The following passages from a recent article by Mr. Charles Angoff indicate the serious nature of the growing competition between the railroads and automobiles. Particularly interesting is the fact that the railroads have in some cases been compelled to install automobile service under their own auspices to meet the challenge of the independent buses and trucks.¹

Most of the general decline in passenger traffic has been in the day-coach business, brought on mainly by the competition of private automobiles and public motor-buses. One railroad president recently said that because of the automobile 30,000 miles of track would soon have to be scrapped. His estimate was probably a conservative one, for the latest figures show that the motor-bus line mileage of the country is now 270,000 miles while that of the railroads is only a little over 250,000. This devastating competition is presenting a problem to the roads that is entirely new in their history. A half century ago it was they who were on the offensive and the other common carriers—for example, the river steamers and canal boats—that were on the defensive. Now matters have taken a turn, and the railroads themselves are fighting for life. But there is one saving fact in the situation, and that is that long distance travel has increased considerably all over the country, and is continuing to increase. In 1921 the railroads got about 31 per cent. of their passenger earnings from travelers in sleeping and parlor cars, and about 69 per cent. from travelers in coaches, including commutation passengers. But in 1926, they de-

¹ C. Angoff, "The Railroads at Bay," in *American Mercury*, January, 1928.

rived nearly 44 per cent. of their passenger revenue from travelers in sleeping and parlor cars, and about 56 per cent. from travelers in coaches. It is largely by the stimulation of long distance travel that the railroads hope to win back that loss in passengers which they are suffering on their local business. . . .

The main effort being put forth by the roads to win back their local passenger traffic has been in the construction of buses similar to those which are taking away their business. Fifty-three railways are now operating buses, and covering a mileage of 7,724 miles, and more and more are falling in line. Some of the buses carry regular point-to-point local passenger traffic, while others merely bring somewhat distant passengers to the station, as the Baltimore & Ohio is doing with its buses running between Manhattan and Brooklyn and Jersey City. The whole business is still in an experimental and chaotic condition. For one thing, there is the matter of the law. The exact legal status of the railroad bus is still not clear; most of the roads are thus obliged to run their buses through subsidiary companies. The New England Transportation Company, the subsidiary of the New Haven, is now operating the largest fleet of railway buses. It has 190 of them. After it comes the Northland Transportation Company, the subsidiary of the Great Northern, which has a fleet of 142.

Whether the buses are bringing back the lost commuters is still a moot question. Most of the Western roads find that they are helping them very little, and that their day-coach business is continuing to decline in spite of them. Others find that, though they are not gaining passengers, the cost of caring for what little they have is much smaller with buses than with trains, and thus their net loss is smaller. Still others profess to find a slight increase in their local passenger traffic business as a result of the installation of the buses.

Many of the roads have also put on freight buses in the attempt to hold on to the local freight business, which private trucking concerns are rapidly taking away from them. Here, too, the effect is still in doubt. The B. & O., which runs a fleet of trucks between Baltimore and Washington, is reporting a saving of more than \$1,000 a month over what it would cost it to carry the same freight by rail.

4. *Steamships*

There is a well-supported tradition that Denis Papin, who was mentioned earlier as the creator of the atmosphere-engine, had in 1707 prepared the model of a steamboat which he had entrusted to a ship captain to be carried to the British Royal Society for exhibition and investigation. The captain was fearful, however, lest the steamboat might prove a success and ruin the business of the sailing vessels which he and his contemporaries were operating. He therefore destroyed the model before he reached England. About 1788 John Fitch, in America, and William Symmington, in England, had successfully applied the steam-engine to the problem of water locomotion. Fitch's work is particularly interesting in that one of his boats actually carried passengers for several months in 1790 and also in that he made use of a crude form of propeller instead of the paddle-wheel which was employed on all the other early steamboats, including Fulton's, up to the 1840's. The inventions of Fitch and Symmington were not, however, adopted on any significant scale.

The honor of having first achieved commercial success with the steamboat must be assigned to Robert Fulton, who was quite as much a promoter as an inventor. He had traveled widely in Europe and was thoroughly familiar with the work of both Fitch and Symmington. In 1807 he had the famous *Clermont* built and launched on the Hudson River and was rewarded by observing his vessel make a satisfactory voyage to Albany. He had the capital to hire first-rate builders to construct the hull, and to import a Watt and Boulton engine. The steamboat was thereafter rapidly developed to meet the need of water transportation in the inland waters of the United States and very soon for ocean transportation. In the process of successfully marketing the steamboat and securing its wide adoption, Fulton played a very important part. By 1819 the *Savannah*, a sailing vessel

with an auxiliary engine, completed a trans-Atlantic trip, but the crossing was achieved quite as much by the use of sails as by the aid of steam. The first truly successful trans-Atlantic trips made by steamboats were those of the *Sirius* and the *Great Western*, which crossed the Atlantic in eighteen and fifteen days respectively in the year 1838. The next year the Cunard line was established, this being the first marine organization for trans-Atlantic steam navigation.

From the time of Fulton onward the progress of steam navigation has been associated with certain technical improvements in the details of propulsion, in the type of motor used, in the material of which boats have been constructed and in the method of organizing and controlling in a commercial way the great fleet of steamboats which now serve the world's commerce. One very significant innovation was the invention of the screw propeller, which possessed very real advantages over the old paddle or stern-wheel propeller, except for navigation in shallow water. Fitch had hit upon a rudimentary form of propeller, and early in the nineteenth century Colonel Stevens of New Jersey had made improvements upon Fitch's device. The actual invention of a successful screw propeller, however, was due to the labors of John Ericsson, later noted as the inventor of the *Monitor*, and E. P. Smith, an English inventor. Ericsson's model, perfected in 1839, was the one generally adopted for application to steam vessels. Even at the present time, however, the paddle-wheel is retained on such large vessels as the Hudson River steamers because of the danger of damaging or entangling a screw propeller in shallow water. In addition to the devising of a propeller, another very significant improvement was found in the turbine-engine, which gave much greater power and took up less space. The Parsons turbine-engine had been invented in the 'eighties, but was first used on the *Kaiser Wilhelm II* in 1901. Much more recently we have witnessed, in some cases, the superseding of all forms of steam-engines, by the electric motor, or by a much more

promising invention, the Diesel engine, an internal-combustion engine burning relatively cheap fuel and requiring no extensive space for boilers or fuel.

Very significant also is the improvement in the material out of which vessels have been constructed. The early ships were, of course, made of wood, though iron scows were built as early as 1787 by an English iron-master, named Wilkinson. These iron scows were utilized for the transportation of coal and ore. At first it was commonly supposed that an iron boat would not float, though scientists familiar with Archimedes' law of floating bodies were convinced to the contrary. It was soon shown that iron construction actually economized weight in ships of the same size, capacity and strength. Wooden vessels were gradually superseded in the English merchant marine following 1840, about the same time that the screw propeller was adopted.

The critical period in the struggle between England and the United States for the ocean-carrying trade fell, unfortunately for the latter, in the decades of the Civil War and Reconstruction. There was some question as to the all-round superiority of iron over wood, but the steel ship, made generally practicable by the Bessemer and open-hearth processes, served to make both older types obsolete. Our preoccupation with the war and its aftermath gave Great Britain a lead which we have never been able to overcome. Some attempts have been made to introduce reinforced concrete into ship construction, but the success of this experiment has not been notable or encouraging to date. The improvement in the materials out of which boats were constructed was paralleled by certain other technical advances, most notably the standardization of parts in ship-building. This has made it possible to manufacture parts of standardized vessels in steel factories remote from shipyards, for collection and assemblage later. This process of standardization of parts in the building of steel steamships probably reached its highest development in the American efforts to build steel vessels

during the World War, and in German submarine construction during the same period.

It was but natural that the progress in the technique of steam navigation should witness a remarkable increase in the size and speed of ocean-going vessels. For example, the tonnage of the *Great Northern* was only 1340, whereas the *Bismarck*, the largest vessel constructed to date, and now known under the English name of the *Majestic*, rates a little over 58,000. Her older and slightly smaller sister ship, the *Vaterland*, now the American *Leviathan*, has been refitted since the war in a manner to give her a tonnage of more than 59,000. The *Great Western* was 236 feet long, whereas the *Majestic* measures 912 feet; the *Leviathan* 907. The engine of the *Great Western* had a horse-power of 440 whereas the engines of the *Majestic* and *Leviathan* develop about 100,000 horse-power. The engines employed in most of the great steamers of to-day are either the improved turbine or a combination of turbine and reciprocating engine. The progress in the speed of trans-Atlantic voyages may also be measured by the comparison of the fact that the *Great Western* occupied fifteen days in making its trip, whereas the *Mauretania* has established a record of four days and ten hours.

The two great types of ocean traffic to-day are carried on by the liners, on the one hand, and the tramp steamers, on the other; in other words, the line traffic and the charter traffic. The average layman, in considering the subject of the steamboat, almost always concentrates his attention upon the great liners, which attract well-nigh all the popular attention because of the description of their remarkable size or speed or tragic disasters in the daily newspaper. As a matter of fact, however, far the greatest part of the commerce of the world is carried on by the relatively small and dingy tramp steamers, which bear what is known as the charter traffic. The liners are relatively large and speedy vessels which run along definite routes, according to a pre-

announced schedule, and land uniformly at certain selected ports. They specialize primarily in passenger, express and mail transportation, all requiring a relatively high degree of speed and safety.

The tramp steamers are far more significant in world commerce, although less picturesque. The tramp steamer is prepared to carry all types of cargoes to any part of the world. It is not usually a large vessel, because it must be small enough so that it will not be required to wait too long in port to secure an adequate cargo. No effort is made to develop speed, because above a certain rate, additional speed becomes progressively more expensive. The average tonnage of a tramp steamer usually runs from twenty-five hundred to five thousand, its speed is usually around ten to twelve knots per hour, and it uses only from twenty-five to forty tons of coal per day, whereas the *Mauretania* consumes something over a thousand tons per day. The tramp steamers effect their connection with shippers desiring their services chiefly through brokerage houses that specialize in the matter of bringing the shipper and the boat owners together. When a shipper desires to send a cargo to some remote port, he usually goes to a broker who puts him in touch with the captain of the tramp steamer which seems best adapted to carry his particular cargo to the desired destination. Usually the rate charged by the owner of the tramp steamer will depend upon the relative possibility of getting a return cargo from the port to which the original shipment is to be sent. In some cases there is a tendency for even the charter traffic to develop somewhat regular lines of transit in order to build up a more permanent and reliable clientèle, but it remains in general relatively flexible and adapted to transporting all types of cargoes to all parts of the earth. The improvement of steam navigation has resulted in a great decrease and standardization of rates. The shipping rates as a whole have been lowered by at least fifty per cent. in the last half-century. The lowering and standardization of shipping rates

have reacted to increase the standardization and equalization of the prices of the commodities thus transported.

5. *Aeroplane Service*

The last and much the most novel addition to the means of transportation has been the aeroplane. The possibility of an aeroplane was first set forth by the medieval scientist, Roger Bacon, in a famous letter written toward the close of the thirteenth century. The first important practical step toward aerial navigation was taken by Montgolfier in 1783, when he demonstrated the practicability of an air trip by means of the balloon. The first air-ship was a combination of the air propeller and the balloon, the balloon having been converted into an elongated form to lessen air resistance. The first promising utilization of the so-called dirigible balloon was made by a Brazilian named Santos-Dumont, who circled the Eiffel Tower in 1901. The actual demonstration of the practicability of the heavier-than-air machine was the work of a courageous American inventor, Samuel P. Langley, who made flights in 1898 and 1903. Langley's work was carried along by the Wright brothers who made a successful flight of twenty-four and a half miles in a heavier-than-air machine in 1906. Steady progress had been made in the practical improvement of the aeroplane until the outbreak of the World War. The value of the aeroplane in war-time for military observation was so apparent that the very best scientific ability in each of the warring countries was speedily utilized in the interest of devising better aeroplanes, and it is probable that no other phase of modern technology was so revolutionized during the War as the aeroplane service. The first non-stop trans-Atlantic flight was made by Captain John Alcock and Lieutenant Arthur W. Brown on June 14, 1919. Since the War regular passenger, mail and express lines have been established in and between most of the European countries and a start along this line has been made in the

United States. There is still much room for improvement, especially in the engines and the terminal facilities, but air service is undoubtedly a permanent addition to modern rapid transit facilities. The mortality in aeroplane service in countries like Germany to-day is less than that on the railroads in proportion to the number of passengers carried.

III. NEW DEVICES FOR THE TRANSMISSION OF INFORMATION

A significant phase of the transformation in modern technology has been the development of new and revolutionary devices for the transmission of knowledge and information. These are not only interesting and significant in themselves, but they have proved indispensable for the existence and development of many other aspects of the newer technology. For example, modern transportation is almost completely dependent upon the telephone and telegraph, while modern international trade rests almost as much upon the cable and wireless telegraph as upon the modern steamboat.

Most of these new methods for rapid and extensive transmission of information have been made possible by the progress in the study of electrical phenomena since the time of the American Revolution. Benjamin Franklin showed the essential identity between lightning and electricity. Seebeck (1770-1831) for the first time worked out the theory and the practise of the magnetic field. Ampère (1775-1836) developed the basic law of electrodynamics, relating to the attraction and repulsion of electrical currents. Faraday built upon their foundations the successful completion of the electric dynamo. Electrical physics was powerfully advanced by the work of Sir William Thomson, who later was made Lord Kelvin. Hertz, in 1887, successfully established the electromagnetic theory of heat, light and sound. Clerk Maxwell and Willard Gibbs developed mathematical physics to the point where a general synthesis of physico-chemical phenomena was possible of statement in certain fundamental and uniform mathematical equations. The Curies, building

on the work of earlier students of physico-chemical and electrical theory, laid the basis for the modern knowledge of radio-activity. Along with these developments in the field of the pure science of electricity, went the various improvements in the methods of generating and transmitting electrical currents and many other phases of the practical engineering associated with electricity.

Crude devices for signaling between relatively distant points had existed from primitive times in such expedients as fires on hilltops or the beating of unusually resonant drums. In the last decade of the eighteenth century Claude Chappé and his brothers worked out an elaborate system of signaling by means of semaphores. This was adopted by Napoleon.

The first important achievement in the way of adapting electricity to the more rapid transmission of information over long distances was the invention of the electric telegraph by Sir Charles Wheatstone and Samuel F. B. Morse. The first practical applications of the telegraph were made by Steinheil in the year 1837, when he sent a message from Munich to Bogenhausen, and in 1844, when Morse transmitted a message from Washington to Baltimore. After Morse's time the successful extension of the telegraph on land readily followed. The next problem lay in providing some sort of an adequate conductor for transmitting information across wide bodies of water. After a series of disheartening failures which would have discouraged a man of less persistence, Cyrus W. Field succeeded in laying a cable across the Atlantic ocean in 1866. At present a network of cables cross all the major water bodies of the planet.

In many ways the most picturesque and striking of these various methods of conquering space and the problems of the transmission of information was associated with the work of Guglielmo Marconi, a brilliant Italian physicist and inventor, who began his labors about 1890. He was able to send a message across the English Channel in 1899, and in 1902 sent the first wireless messages across the Atlantic

Ocean, a distance of some three thousand miles. This demonstrated the practicability of the wireless telegraph, and subsequent developments have been chiefly matters of practical detail and application. Wireless telegraphy has revolutionized the methods of keeping in communication with moving vessels at sea, and, where it is desired, with moving vehicles upon land. Marconi's invention rested primarily upon practical application of Hertz's discoveries.

The telephone, which was earliest practically installed by Elisha Grey and Alexander Graham Bell in 1876, first solved the problem of transmitting the sound of the human voice over considerable distances by means of conductors and electrical devices. In some ways, even more phenomenal than the wireless telegraph have been the developments in the field of perfecting the wireless telephone since 1909. The same general electro-physical theories lie behind this and Marconi's telegraph. Doctor Lee de Forest, Colpitts and others made an application of these physical theories to the transmission of the human voice over long distances without the necessity of a metallic conductor. In the form of the modern "radio," the wireless telephone has already gone far toward revolutionizing the methods of long-distance transmission of information directly through the reproduction of the human voice. Even photographs can now be sent by wireless. Remarkable developments recently in "television" seem to make it certain that ere long one talking on a telephone can literally behold the countenance of the person at the other end of the line.

These new devices for transmitting information have tended to shrink our planet enormously with respect to rapid communication between its most distant parts. It is possible to-day to transmit information from central Siberia to New York City with greater ease and speed than it was to send similar information one mile in 1750. As a matter of fact, time has been almost eliminated as a factor in the transmission of information. Experiments during the Washington

Conference on the Limitation of Armaments (1921-22) proved that it was well-nigh impossible to detect any difference in the time required to flash a result upon the screen in Washington in the room adjoining the Conference and in New York City. In this way the world has become a veritable psychological unit to a degree which men of Adam Smith's time could not have imagined in periods of the wildest and most reckless prophecy.

IV. SOCIAL APPROPRIATION AND DISSEMINATION OF THIS INFORMATION

The instantaneous transmission of information and ideas has brought with it a huge expansion of devices and organization for the social appropriation of news material. Most notable have been improvements in printing and news-gathering, making possible the cheap popular daily newspaper, and the growth of the postal system. The printing-press had been invented by Coster and Gutenberg in the middle of the fifteenth century, but the mechanical processes still remained crude. Pages were printed by pressing a flat pad of type on the sheet of paper, and all type had to be set by hand. The first important improvement was the cylindrical press, which made possible rotary printing. The cylindrical printing-press evolved from the similar device used for printing calicoes, introduced during the early part of the Industrial Revolution, and was successfully adopted in the office of the *London Times* in 1812. It was an enormous improvement with respect to time and efficiency over the old pad press. Since 1812 the evolution of printing-presses has been one of the most notable features of the progress of modern mechanical ingenuity. The great modern presses not only print with great rapidity, but also make possible the automatic cutting and folding of pages and papers, in many cases performing difficult processes with a speed and dexterity incredibly superior to the human hand.

The possibility of using these improved printing-presses would, however, have been remote were it not for an equally remarkable development of typesetting machinery. Originally, type was slowly set by hand, with the aid of a pair of tweezers. This crude method has since been supplanted by a typesetting machine which casts type from molten metal, the operator controlling the type-casting in a manner largely identical with the technique of operating a typewriter. Credit for inventing typesetting machinery belongs to a German-American inventor, Ottmar Mergenthaler (1854-99), who began his work on the linotype machine in Baltimore about 1876. By his achievements in this field he deserves to be ranked with Coster and Gutenberg in the history of printing. The so-called linotype machine sets a solid line of metal type and represents the quickest method yet devised. It has one important defect, in that an error made in one letter requires the resetting of an entire line. To get around this difficulty the so-called monotype machine has been devised, but has not yet enabled the printer to set type as rapidly as with the linotype machine. This new typesetting machinery has enabled the typesetters to keep pace with the speed of the printing-press, and it is through the combination of the telegraph, the rotary press and the linotype machine that we are now able to secure news about events which may have taken place less than an hour previous to the moment in which the newspaper is delivered to customers on the street.

The social significance of newer types of printing machinery would have been much less without the corresponding development of elaborate agencies and social machinery for gathering news. If every newspaper were compelled to support its own correspondents in all parts of the world and to maintain its own telegraphic and cable connections, the expense would be so great that only a few newspapers could well support this system. Instead of this, there has developed a specialized type of news-gathering agency of which

Reuter's, Wolff's and the Associated Press are examples. Such an agency is an elaborate organization of correspondents and the necessary cables and telegraphic communications essential to the transmission of the information gathered. Through this elaborate machinery all significant information available in all parts of the world is put at the disposal of newspapers that are willing to pay for the service. They are thus able, by a relatively small expenditure, to obtain a variety and volume of news which would otherwise be absolutely denied to them.

While from the standpoint of technical efficiency these organizations have achieved remarkable progress, the accuracy of this service has occasionally been criticized. In the first place, the type of news which will be gathered inevitably depends to no small extent upon the economic, social and intellectual attitude and desires of the participating newspapers or their advertisers. In the second place, the newspapers using the service still further distort the truth by selecting and restating the information. In this way, much really significant news is lost to the public and much which is actually printed is highly unreliable. In spite of these defects, however, it is certain that we have profited enormously in securing more rapidly gathered and unprecedentedly varied information concerning what is taking place daily all over the face of the earth.

The final factor of this progress toward better social appropriation of information is to be found in the improvement and cheapening of postal systems. Our modern business system would be well-nigh paralyzed if it were compelled to return to the system of mail distribution which prevailed in the postal service of the world in 1830. In the first place, there has been a great technical improvement in the methods of distributing mail, particularly through closer cooperation with the railroad service, the mail service thereby improving with every advance in the technical efficiency of the railroad. The development of automobile trucking and

pneumatic tubes for the distribution of mail in cities is a notable phase of the recent material advance in the postal system. Rowland Hill worked out a scheme for the cheapening of mail distribution in England about 1840, which has been widely imitated, with many specific variations, in the other countries of the modern world. Particularly important has been the tendency toward standardization of the rates for the transmission of letters, irrespective of distance, within any national boundary, and such international agreements as those which prevail between England and the United States, in which the same postage rates apply to a letter sent from Chicago to London or New Zealand as apply to a letter sent from Chicago to Springfield, Illinois. Of enormous importance in the improvement of the postal system has been the recent tendency in the United States toward the establishment of the rural free delivery, which puts at the disposal of the agricultural population most advantages hitherto restricted to city populations. Here the automobile has recently proved of great utility.

The latest stage in the communication of information and its social appropriation is associated with the development in the moving-picture industry and the so-called "radio." The news reels present a vivid visual reproduction of events which have happened in various parts of the world in the very recent past. Photographs can now be transmitted by cable and radio, and it is not unthinkable that we shall ultimately be able to transmit news reels by cable or wireless, so that an audience in Kansas City may see upon the screen in the evening events that took place in Cape Town the same morning. The radio enables a vocal account of events over wide areas, and has proved of great value in transmitting information in case of floods and other natural disasters which have destroyed the other means of communication. In time of peace and liberty these devices are of positive value to the community, but their possibilities in time of war in the way of developing the mob spirit present a very

great potential menace, and they also open up new channels for class and party oppression. Already there is the same tendency for the ruling groups to control the movies and the radio that has been shown in their domination of the newspapers. Communistic films and speeches are tabooed in capitalistic states and capitalistic pronouncements in communistic areas.

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CHAPTER V

CHANGES IN MATERIAL CULTURE PRODUCED PRIMARILY BY APPLIED CHEMISTRY

I. THE IMPORTANCE OF CHEMISTRY IN MODERN INDUSTRY

It is probable that no other department of science has had so large an influence as chemistry in transforming our material culture. We are familiar enough with the fact of the remarkable achievements of contemporary synthetic chemistry in producing from various by-products perfumes, flavoring extracts and a vast variety of other commercial products. We are also acquainted with like achievements in creating cellulose, sugar and other similar substances. We have also heard of the striking accomplishments of modern chemistry in revolutionizing the dye industry. We are not, however, always so conscious that the iron and steel industries, the petroleum industry, the rubber industry, and many of the modes of contemporary illumination rest just as decisively upon the contributions of applied chemistry. Further, chemistry has not only helped to revolutionize manufacturing industry; by its artificial creation of nitrogen and other useful substances it has been instrumental in transforming agriculture and putting the agricultural industry on a scientific basis. The remarkable degree to which chemistry underlies contemporary industry has recently been summarized by Professor George Ellery Hale in the following manner:¹

¹ G. E. Hale, "Science and the Wealth of Nations," in *Harper's Magazine*, January, 1928.

The marvellous development of the chemical industries, which are now producing synthetically from coal-tar distillate most of the dyestuffs, antiseptics, high explosives, perfumes, flavors, and medicinals of commerce, became possible only after many years of painstaking scientific research had established the molecular theory of the structure of carbon compounds.

Priestley's observation that electric sparks in the air produce compounds of nitrogen and oxygen and Cavendish's production of nitrate of potash from the resulting gases are the sources of the artificial nitrate industry, which has increased the yield of crops.

Recent improvements in the fixation of nitrogen, the conversion of cheap oils into valuable fats, and the direct production of wood alcohol from coal and water have been made possible by scientific researches on the principles determining the equilibrium of chemical reactions and the possibilities of accelerating them by catalysis and by high pressures and temperatures.

The discovery of calcium carbide and acetylene gas by Wöhler and the subsequent investigations of Moissan, Willson, and Le Chatelier made possible the use of acetylene gas for illuminating purposes and its application in blow pipes to the cutting and welding of metals.

The great industry of paper manufacture from wood pulp had its germ in Reaumur's studies of wasps, which construct their papery nests of materials produced by the mastication of bits of wood and other vegetable substances.

In this chapter we shall examine some of the leading types of service which applied chemistry, physical and organic, has made to the transformation of contemporary material culture.

II. THE TECHNOLOGICAL REVOLUTION IN THE IRON INDUSTRY

The new textile machinery and the steam-engine, which had been devised to furnish the motive power for this machinery, required a far greater supply of iron and steel products, and also made it necessary that these should be

produced at a cheaper cost than before. At the opening of the eighteenth century the iron and steel industries were in much the same state in which they had been for thousands of years. Especially was this true of the methods of manufacturing iron. The ore was smelted chiefly with charcoal. The furnaces were too small and the air-blast machinery too crude to make large castings or even to produce small ones in large quantities. In spite of the small output, the use of charcoal had led to the gradual deforestation of those countries which had developed the iron industry to any degree. The first notable attempt to introduce the use of coal as a fuel for smelting iron ore seems to be associated with the work of an English blacksmith by the name of Dud Dudley, around the close of the first quarter of the seventeenth century. While Dudley was unquestionably headed in the right direction, his methods were so crude as to render his efforts largely futile, and such success as he seemed likely to achieve was obstructed through the jealousy of neighboring blacksmiths, who feared lest his innovations might revolutionize the industry. It was not until about 1735 that the use of coal as the main fuel in the making of iron products was successfully introduced. At this time, the achievement was carried through by an English iron-master named Abraham Darby, who utilized coke as the fuel in his furnaces at Coalbrookdale. Coke, or coal from which the coal-gas and other impurities have been burned out in closed furnaces, has been found more satisfactory as a fuel in the smelting of iron ore than coal in its native form. Coke will burn much more rapidly and produce a greater amount of heat than coal, and the flame possesses fewer impurities likely to mix with the molten iron and thus lower its quality. Another important contribution to the iron-making process came about 1760, when John Smeaton developed the air blast-furnace. This device was soon notably improved by Watt's work with the steam-engine, which was applied to drive the rotary fan of the blower.

It was upon the basis of these innovations by Darby and Smeaton that Peter Onions and Henry Cort were able independently to work out their new process for the manufacturing of malleable iron in the years 1783-1784. The new machinery and engines had to be built of better stuff than the cast iron so far produced, which was weak, undependable and full of impurities. Onions and Cort hit upon a process of making malleable or pure wrought-iron relatively cheaply and in large quantities. Their furnace was arranged in such a way as to keep the pig-iron out of contact with the fuel, so that it would not absorb the impurities arising from the burning coke. A hot flame was played over the molten pig-iron which they stirred vigorously, thus burning out the impurities which had not been absorbed by the chemical lining of the furnace. This left a high-grade product. It was from this stirring or "puddling" of the molten iron that the process came to be known as the puddling process. The methods of Onions and Cort were notably improved by Joseph Hall about 1830 and by Henry Bessemer later. Bessemer generated an exceedingly hot flame by the simple method of introducing a blast of air into the molten iron, the oxygen in the air burning out most of the impurities. With this development of greater heat, the puddling or stirring became unnecessary. An important allied improvement in the iron industry was also carried on by Cort in conjunction with Purnell, when they developed the rolling-mill for eliminating impurities and for cutting and shaping iron products. Sheet-iron had been rare and expensive under the old methods of hand hammering which could never have produced the type of steam boiler plate familiar to us.

Iron and steel production has been greatly aided by improvements in allied industries, such as coal-mining and the extraction of ore. Watt's steam-engine was much more efficient than the older atmosphere-engine for pumping water from the coal mines. Sir Humphry Davy's invention of the safety-lamp in 1815 helped to solve the problem of

gas explosions, set off in mines by torches or candles. It provided for an enclosed lamp in which an open flame would no longer be brought directly into contact with the gases in the mines. There is some justice in the remark of one writer that Davy's safety-lamp was a much more important event in history than the battle of Waterloo, which took place in the same year. Since Davy's time coal-mining has been put upon a mechanical foundation to such a degree that the modern mine is little less than a great factory with many of its technical devices operating underground. With its electric elevators, its elaborate network of car-tracks and coal trains operated by electricity, its series of great steel beams and girders supporting the roof, its elaborate system of electrical illumination, its power drills and high explosives, the modern coal mine is one of the most remarkable examples of the triumph of the mechanical technique in the modern age. This revolution in technique is, of course, not limited to work which goes on beneath the ground, but to all phases of the process of preparing coal for consumption. In particular, should be mentioned the automatic system of coal sizers and graders and the elaborate mechanical devices for the loading and unloading of coal trains and boats.

No less remarkable have been the improvements in extracting iron ore. In the eighteenth century the tools used were the hand pick and the shovel. At the present time, very much the same mechanical improvements and devices have been introduced in the extraction of ore as exist in the mining of coal. The ore is separated from its matrix by the use of the steam drill and the high explosive. It is then scooped up and loaded, not by hand shovels, but by steam shovels of the type which are utilized in railroad and canal construction. These steam shovels load the ore on ore cars which are taken to the various centers of iron and steel manufacture. Even in the matter of unloading the coal and ore, the new mechanical technique has been of the utmost service in providing an elaborate series of hoists, traveling

cranes and innumerable other mechanical devices competent to handle heavy products of this sort.

III. THE NEW STEEL INDUSTRY

At the close of the eighteenth century, steel was still produced by the slow, crude and expensive process of baking the impurities out of the molten iron in sand boxes. The new machinery required, not only the purer iron provided by Cort's process, but also a considerable amount of steel for the parts subjected to the greatest wear or strain. In the first half of the nineteenth century many attempts were made to devise better methods of manufacturing steel. Apparently the first successful one was that of a Kentucky blacksmith by the name of William Kelly, who began his experiments about 1846. Kelly's process was almost identical with that of Bessemer a decade later, and consisted of introducing into molten iron a jet of cold air. This air, instead of cooling the molten iron, generated an even greater heat because of the introduction of oxygen and the resultant burning out of impurities.

While there is little doubt that Kelly was the pioneer in modern scientific steel-making, his methods were not given wide publicity and had relatively little significance in the history of the industry. Sir Henry Bessemer worked out the same process independently in England. Having already made a fortune by his numerous inventions, he attempted, in the 1840's, to improve Cort's method of manufacturing malleable iron. A projectile, which he invented in the early 'fifties, required a high muzzle velocity and hence a heavy charge of powder in the cannon which fired it. In this way his attention was drawn to the scarcity and cost of good steel. He discovered by accident, because of a hole in one of his furnaces which had been stopped with a piece of iron, that the admission of air into the molten metal set up a process of "internal combustion" which burned out the im-

purities. This is the principle of what we know as the Bessemer converter. Steel is pure (malleable) iron with the right proportion of carbon added. It was soon discovered that the original Bessemer converter would not work with ores containing considerable phosphorus. It was also inadequate for the finer grades of steel because of the impossibility of taking samples of molten metal during the process in order to insure the complete elimination of impurities or to adjust exactly the amount of carbon, manganese or other elements to be added. Its great advantage lay in its cheapness, which immediately reduced the price of good ordinary steel by more than seventy-five per cent.

On account of the defects of the Bessemer process in manufacturing an excellent grade of steel, just mentioned, a new method was devised by Siemens in England about 1858 and first put into effective practise by the firm of Martin in France in 1864. Before the close of the 'sixties it had proved a practical success for producing high-grade steel in relatively large quantities. The Siemens-Martin or "open-hearth" process may be described briefly as follows: The iron ore is first reduced in the blast furnace, and the molten iron is drawn off into troughs known as sows, from which it runs off into small transverse receptacles known as pigs. Here it is allowed to harden, and the pigs are removed in blocks and constitute the pig-iron which is remelted in the process of making steel by the open-hearth method. The pig-iron is mixed with scrap-iron, put in the open-hearth furnace and remelted. An air blast is introduced which burns out the impurities, but the process is much less rapid than with the Bessemer process. It usually takes about four hours to prepare steel from the molten iron in the open-hearth furnace as compared with forty minutes in the Bessemer process. The problem is to burn out all of the impurities and then, after the impurities have been eliminated, to add exactly the right amount of carbon, manganese and other ingredients to make the steel sufficiently tough and

hard. The phosphorus and the silicon are burned out in the first and second hours, whereas the manganese and carbon are burned out primarily in the third and fourth hours. In the open-hearth process it is possible from time to time to take samples and to discover just how well the impurities are being burned out. Finally, the desired amount of carbon and manganese are introduced, and then the product, as high-grade steel, is drawn off from the bottom of the furnace instead of being turned out at the top of the converter, as in the Bessemer process.

The amount of carbon contained in steel varies from a mere trace to about two per cent., but most steel has a carbon content of under one per cent. If the carbon content is low, then the steel is very tough, but also very soft, while too high a carbon content makes the steel extremely hard, but also too brittle.

While the open-hearth method provided for the possibility of making a higher grade of steel than the Bessemer process, yet it had one notable defect, namely, the greater expense and the longer time element involved. As a result of this many of the more progressive steel manufacturing concerns have introduced what is known as the "duplex process" which is a combination of the Bessemer and the open-hearth processes. In this duplex process, the molten iron is conveyed directly from the blast furnace to a Bessemer converter. After the Bessemer process has been executed the Bessemer product is poured into the open-hearth furnace and the further purification of the molten iron is here carried out. The advantage of the duplex process is that it greatly reduces the time required in the ordinary open-hearth process and, at the same time, gives a far better grade of steel than is possible with the Bessemer process if used alone.

One difficulty which was met in the earlier utilization of both the Bessemer and Siemens-Martin processes related to the utilization of iron ore highly charged with phosphorus.

At first it was found impossible to eliminate the phosphorus so that the resulting steel product would be satisfactory. The solution of the problem was worked out by two English scientists and engineers, P. C. Gilchrist and Sidney Thomas, who developed what is known as the basic limestone lining, which, during the process of purification in the furnace, absorbs all the phosphorus from the molten iron. This basic limestone lining was first applied to the Bessemer retort, but soon came to be utilized in the open-hearth furnace. If the molten iron has a low percentage of phosphorus, the open-hearth furnace utilizes what is known as acid lining, instead of the limestone. The Thomas-Gilchrist invention, more than anything else, made possible the all-important development of the German steel industry because of the high phosphoric content of the Lorraine iron beds.

The famous Krupp process of making steel is nothing more than a very ingenious and highly scientific combination of the best modern methods. The result is the production of good steel in large quantities at moderate cost, coupled with an unusually high degree of uniformity. The better types of commercial steel are to-day made almost entirely by the Siemens-Martin or open-hearth process, though the Bessemer process is still utilized for making railroad rails. At present a far greater total quantity of steel is made by the open-hearth method than by the Bessemer process. The better types of tool steel, case-hardened steel, crucible steel, etc., are made by complicated processes which need not be described at this place because they involve no fundamentally different scientific facts and because the importance of these types of steel by no means compares with the products of the Bessemer and open-hearth processes. It may be worth mentioning that the best methods of making unusually high-grade steel in relatively large quantities have been found to be associated with the use of the electric furnace which has been widely utilized in Sweden. It need not be supposed that we have reached anything like perfection in

the methods of making steel or that further revolutionary improvements are impossible.

Steel is to-day widely used in other ways than in the making of machinery, most notably in building operations, from great bridges and sky-scrapers to ordinary dwellings and even articles of furniture. Concrete reinforced with steel has become one of the most common of building materials. This has greatly increased the demand for steel as the framework of such concrete construction, whether in bridges or in office and factory buildings. Paralleling this increased use of steel as building material, the progress of engineering has made possible the rigorous testing of materials and the achievement of adequate strength in structural steel work without introducing any more than the necessary amount of steel. In this way, safety and economy are harmonized. No phase of modern engineering has been more significant in the building industry than that rather modest department of endeavor known as the testing of materials.

IV. ARTIFICIAL ILLUMINATION IN MODERN MATERIAL CULTURE

To an almost unbelievable degree modern industrial society is dependent upon improved methods of artificial illumination. The modern factory is usually constructed in such a manner as to require a wide use of artificial light, particularly on dark days and in the early morning and late afternoon hours. The same situation obtains in the great business blocks, subways, tunnels and, above all, the mines. Likewise, life in the modern city would be unsafe at night without elaborate provisions for artificial lighting. The inconvenience and dangers which are experienced in the modern city by a temporary breakdown in the gas or electric-lighting systems are but a slight measure of the situation which would exist if we were to be deprived of all artificial illumination. Primitive man apparently relied chiefly upon

the torch. Very early, however, the use of some form of tallow candle or dish of oil, as a lamp, developed. The candle or the oil lamp remained almost the sole method of artificial lighting, even with the better classes, until late in the nineteenth century. The chief type of oil used in the lamp of modern times down to about the middle of the nineteenth century was sperm or whale oil, which had been produced in large quantities since the discovery of new fields for whaling during the expansion of Europe in the Commercial Revolution. About the time of the American Civil War, kerosene began to be introduced on a wide scale as the chief illuminant used in lamps, and the kerosene lamp is still generally used by agricultural populations throughout the Western World.

The first revolutionary changes in the methods of lighting were associated with the development of the gas light dependent primarily on notable advances in chemistry in the seventeenth and eighteenth centuries. Successful experiments upon the gas-light were conducted after 1792, and in this progress the most notable name is that of C. A. von Welsbach. Gas lighting did not become general until about the middle of the nineteenth century, and its use was at that time chiefly limited to cities. Nothing ever devised produces a better light than gas, but it has many defects, such as the rather irritating odor and various dangers associated with its use, including possible asphyxiation. Most of the good qualities of the gas light have been combined with unique cleanliness, safety and ease of operation, in the development of electric lighting since the middle of the last century. The electric arc light was demonstrated to be a success in the year 1858, and the incandescent light was devised just twenty years later, though of course it must be understood that the first type of both lamps was crude and imperfect. Even at the present time we are witnessing significant technical improvements in every type of electric lighting.

It would be hard to overestimate the economic, social and intellectual significance of these modern improved lights.

Their provision has alone made possible many phases of modern industrial life and social concentration. Production has been enormously increased by making it possible for people to work under conditions and during hours that would otherwise be impracticable for productive labor. Again, the significance of gas and electric lights for modern recreation, specialized as it is chiefly in the hours after six P. M., is at once obvious, and the educational significance, in the broadest sense of the term, is apparent to any one who will attempt to estimate the importance of the theater, night schools, university extension work, evening lectures, etc.

V. MODERN SYNTHETIC AND ECONOMIC CHEMISTRY

One of the most novel of the contributions to modern technique which has been a product of the Scientific and Industrial Revolutions has been the development of modern synthetic chemistry and its application to contemporary economic life. The history of chemistry is something which can be traced back to the alchemy of the Arabs and the ancients, but the foundations which possess immediate practical significance were laid chiefly in the seventeenth and eighteenth centuries, their first stages culminating in the work of men like Lavoisier. The first important workers in modern organic chemistry were Liebig and Wöhler, who, about 1832, developed on the basis of certain prior work the general theory of the benzoic compounds, based upon the combinations of the so-called "benzo-ring." A further contribution of great importance was Kekulé's conception of the valency of chemical radicles, which was made the foundation of our modern knowledge of the structure of organic compounds. It remained, however, for Emil Fischer, probably the most energetic and constructive genius in the history of modern economic and synthetic chemistry, to make the contributions of synthetic chemistry thoroughly available for modern industrial life.

Only the professional chemist or the layman who has read such works as Darrow's *Story of Chemistry* or Slosson's *Creative Chemistry* can well understand the astonishing degree to which modern civilization depends upon various phases of applied chemistry. Modern chemical dyes, made from coal-tar, have worked an even greater revolution in the dye and textile industries than was produced by the discovery of vegetable dyes during the period of European expansion. Some of the more important of the modern perfumes and flavoring extracts are likewise derived from coal-tar. In fact, in the period before the war, Germany exported something like a million, five hundred thousand dollars' worth of perfumes each year. We are now able to manufacture synthetically that extremely important product, nitrogen, together with its various derivatives. Glucose, starch, sugar, sirups and gums are made with ease by synthetic chemical processes. The beet sugar industry has been built up primarily on the basis of modern chemistry. One of the most interesting and illustrative instances of the remarkable contributions of organic chemistry to modern economic life is to be derived from the table² on the opposite page, listing the divers products which are extracted from ordinary maize or Indian corn.

Extremely important also are the various ways in which modern chemistry has been employed to utilize by-products and provide substitutes for more expensive natural products. The utilization of coal-tar for the manufacturing of dyes, perfumes, flavoring extracts, etc., is an admirable example of both the utilization of by-products and the development of substitutes for natural products. Equally interesting has been the utilization of cotton-seed oil. Down to relatively recent times cotton-seed was regarded as entirely useless and was thrown away after it had been separated by the gin from the cotton fiber. At the present time the hulls

² From *Creative Chemistry*, by Edwin E. Slosson, p. 184. Courtesy of The Century Co.

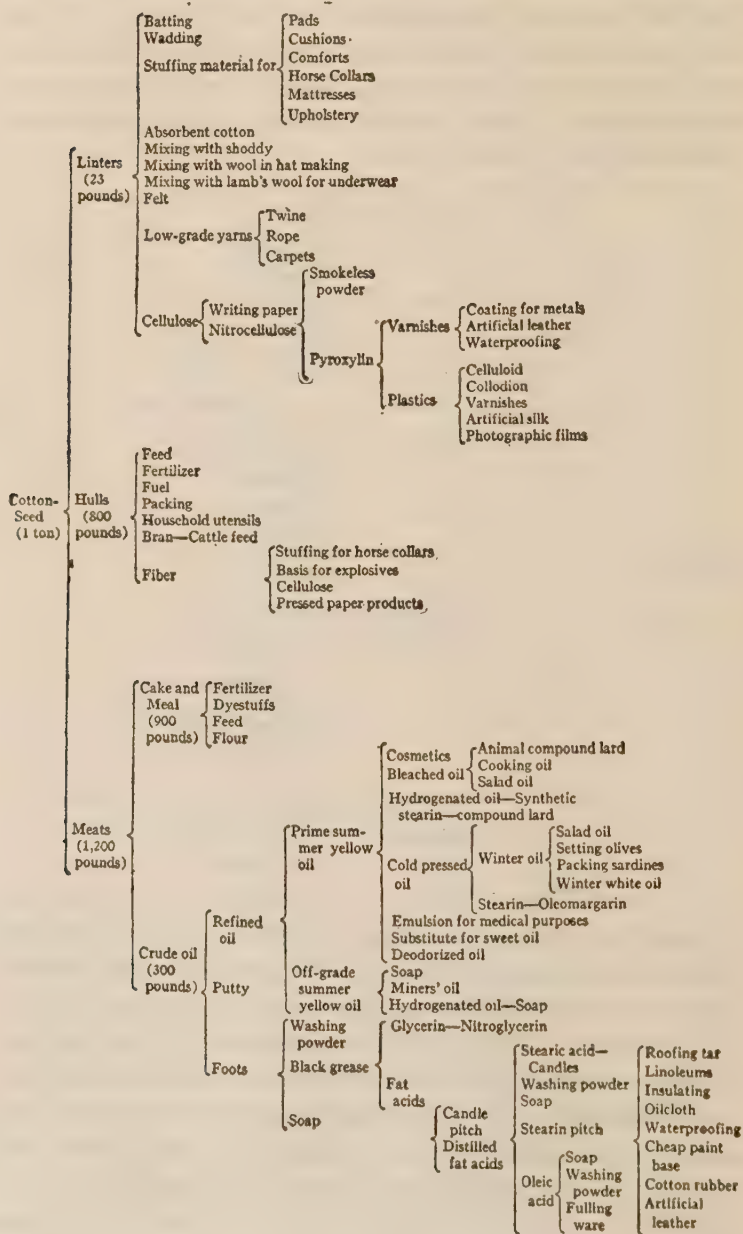
are utilized as food for cattle, and the oil extracted has the most divers uses, including the making of salad oil, soap, candles, glycerine, water-proofing material and oleomargarin. The table on the following page (from Slosson's *Creative Chemistry*, p. 198) indicates some of the more important derivatives from cotton-seed.

CORN PRODUCTS

Corn kernel	germ	corn oil	table oil	
			dyers' oil	
		oil cake	soap	
			glycerin	
		oil meal	rubber substitute	
	body	starch	 cattle food	
			table starch	
		hydrolyzed	laundry starch	
			dextrose	
			glucose	
			maltose	
			corn sirup	
			hydrol	
			tanners' sugar	
			cerelose	
			white dextrin	
			canary dextrin	
			British gum	
			envelop dextrin	
			foundry dextrin	
			amidex	
			gluten	vegetable glue
				vegetable casein
	gluten meal			
hull . . . bran				

It will scarcely be necessary to call attention to the fact that the steel-making process, which we have already analyzed, depends upon the application of chemistry to modern manufacturing, and we shall soon analyze the development of the petroleum and rubber industries, which likewise rest almost entirely on certain chemical processes by which the crude petroleum and the raw rubber are adapted to commercial use. Not only is the manufacturing industry powerfully advanced by the new chemistry, but also the more important

PRODUCTS AND USES OF COTTON-SEED



modern scientific methods of fertilizing the soil rest upon the discoveries and applications of contemporary chemical science. Particularly important along these lines are the possibilities of manufacturing artificial nitrogen and potash on a large scale. Chemistry not only produces the particular types of fertilizers which are useful to modern agricultural chemistry, but it also provides a method for analyzing the soil in order to ascertain exactly what types of chemicals need to be added in each case in order to insure the maximum degree of fertility and productivity. In short, it is safe to hold that very little of the extensive technical development in modern industrial life would have been possible on any large scale without the many and divers contributions of chemistry.

VI. THE MODERN PETROLEUM INDUSTRY—THE OIL AGE

With the development of modern machinery and its need for lubricants, and particularly since the development of the successful internal-combustion engine, the importance of petroleum and its derivatives in modern economic life has become more and more apparent. In many ways, it is not inaccurate to regard the present era as the "Oil Age." Certain it is that, with the possible exceptions of steel and coal, no element in modern life is more significant than the various uses and services of petroleum and its derivatives. A general knowledge of the existence of petroleum has prevailed from ancient times. In the first half of the nineteenth century petroleum was extracted in small quantities and sold for its alleged medicinal properties. Due to the fact that one of the chief promoters of this enterprise was Samuel Kier, petroleum was for a time known as "Kier Oil." Just before the American Civil War (1858), Edwin L. Drake and others successfully solved the problem of drilling oil wells, and before the Civil War was over thousands of barrels of oil could be produced daily.

There was, however, relatively little demand for this oil, and the slight supply exceeded the demand, but in the 'seventies the utilization of petroleum, particularly in the form of kerosene lamps, increased the demand, and soon the growing importance of the internal-combustion engine still further widened the market for petroleum products. At the same time, an increased market for the heavier petroleum derivatives was found in the use of lubricants for all types of modern machinery. Parallel with the growing demand for petroleum products went the development of the cheaper and more efficient processes of refining the petroleum, particularly in providing gasoline for the internal-combustion engine. The problem of transporting oil was a serious one, which was first solved by shipment in tank-cars, a method which is still widely used, particularly where pipe-lines are not available. Very soon, however, John D. Rockefeller and others conceived the possibility of transporting oil over great distances by means of pipe-lines, and this much cheaper method has been provided by the Standard Oil Company and some other producers. In fact, it is this pipe-line method of transportation, rather than control of the supply of oil, which made the Standard Oil Company something rather close to a monopoly in the petroleum industry.

Another extremely important use for petroleum has arisen through its replacement of coal as a fuel for locomotives, steamboats and domestic heating plants. Oil-burning engines have been proved to be much cleaner than coal-burners, and a more uniformly hot fire can be sustained. It is, of course, obvious that by far the greatest cause for the increase in the demand for petroleum products, particularly for gasoline, has been the remarkable development of the automobile and the motor-truck industry in the last twenty years.

To a very high degree, the perfection of the commercial and technical aspects of the modern oil industry must be assigned to the rise of great international concerns such as the Standard Oil Company and the Royal Dutch Shell with

various footholds in every part of the globe. So important is petroleum in the modern age that great states are willing completely to reverse their traditional diplomatic policies and attitudes of a century's standing in order to secure better concessions for oil wells. It is probable that no single factor plays so great a part to-day in international politics as the sources of petroleum supply and the efforts to get satisfactory control of, or access to, them. The great importance of even so minor a petroleum product as modern lubricants can well be gleaned from the great deterioration of the rolling-stock on the German and Austrian railroads during the World War on account of the gradual exhaustion of the supply of lubricants in the Central Empires.

VII. RUBBER IN MODERN INDUSTRY AND TRANSPORTATION

Raw native rubber was known for centuries before it was utilized in a commercial way. Down to the middle of the nineteenth century the only uses of rubber were in spreading it on surfaces in order to shed water or rolling it into balls for erasers and similar devices. Its successful utilization in the manufacture of clothing had to wait until some method was found of adapting rubber to withstand extremes of temperature and of giving it sufficient strength to prevent its quick cracking or disintegration. The only important utilization of rubber for clothing which was achieved before the time of Goodyear was the device of Charles Mackintosh, who about 1825 conceived the notion of putting a layer of gum rubber between two pieces of cloth, thus rendering the product waterproof. The rubberized raincoat or "Mackintosh," as it was formerly called, has perpetuated the name of its inventor. The honor of having discovered a method of adapting rubber to changes of temperature and to commercial uses on a large scale must be assigned to Charles Goodyear, who, in 1839, accidentally dropped on the stove a mixture of rubber gum and sulphur. He noticed that these

two substances tended to fuse under heat. In this way, there was accidentally discovered the famous process known as vulcanization of rubber, from the progressive improvement of which all forms of modern commercial rubber are derived.

After Goodyear's discovery, it was possible to carry on a remarkable development of the rubber industry in the way of manufacturing rubber clothing and footwear. In this innovation, Goodyear himself and others, such as Goodrich and Candee, took a very prominent part. But important as rubber clothing and footwear may be in modern economic life, the demand for rubber products of this sort never reached anything like the commercial significance which has grown out of the manufacturing of bicycle and automobile tires. The principle of the pneumatic tire was first discovered by R. W. Thompson of London, in the year 1845; but the first actual utilization of the pneumatic tire was the work of an Irish veterinary surgeon, J. B. Dunlop, in 1888. Dunlop's invention was practically synchronous with the remarkable growth of the bicycle industry in the United States and Europe, which created an enormous demand for rubber. Scarcely had the bicycle industry become thoroughly established when the automobile or "horseless carriage" began to make its appearance about 1895. Within ten years the automobile industry had become an important one, and it is now one of the three or four major industries of the contemporary world.

The phenomenally rapid growth of the automobile industry has created the remarkable rubber industry of the present day, which devotes most of its efforts to the production of automobile tires. The total value of rubber products in the United States in 1925 was approximately \$1,500,000,000. The consumption of raw rubber in the United States rose from 100,000 tons in 1913 to 500,000 tons in 1925. Fifty-nine million automobile tires were produced in the United States in 1925.

The rubber industry, of course, has far wider ramifications than the mere manufacturing of raw rubber into rubber products and the distribution of these products to the consumer. It involves also the development of rubber plantations and other methods of insuring an adequate supply of raw rubber. More than three million acres of rubber plantations are now under cultivation, producing annually some seven hundred thousand tons of crude rubber. Along with petroleum, the modern rubber industry has been one of the most notable by-products, as it were, of the growth of the internal-combustion engine. There is little doubt that the rubber industry is at the present time quite literally in its infancy. There seems almost no concrete limit to the growth of the automobile industry, and with every increase in the number of automobiles used there goes a corresponding expansion of the rubber industry. More, rather than less, rubber will in all probability be demanded, as the trend toward balloon tires would seem to indicate.

In this chapter we have not, of course, in any sense pretended to do more than to call attention very briefly to some of the outstanding ways in which contemporary chemistry has revolutionized modern material culture. To give anything like a complete account, one would need to describe: (1) the development of the Portland Cement industry and its effect upon the construction of buildings and roads; (2) the application of chemistry to the manufacture of high explosives for both peace-time and warlike purposes; (3) the rise and expansion of modern photography, as science, art and industry; (4) the production and uses of industrial alcohol; (5) the application of chemical knowledge to the field of agriculture, in the way of soil analysis, and the provision of nitrogen, potash and other fertilizers; and (6) the divers uses of chemistry in modern medicine, from Pasteur's researches in pathology to radium therapy and the chemical reproduction of the hormones of the glands of internal secre-

tion, to mention but a few of the many aspects of modern chemistry which we have overlooked in the body of the chapter.

VIII. THE SPIRIT OF INVENTION AND THE DENIAL OF REPETITION AND STAGNATION

Perhaps the best conclusion which we could have to this section on the technological changes, which constituted one phase of the Industrial Revolution and initiated many resulting aspects of this great transformation, would be briefly to comment upon the spirit of invention and the relation of inventions to modern civilization. As Gabriel Tarde pointed out in his brilliant system of social philosophy, inventions are the chief source of innovation in modern culture. Only by inventions can culture be changed in any very fundamental way, except through the mere borrowing by one group of the inventions which another group has earlier produced. Above all, the spirit of invention is a denial or a destruction of the spirit and processes of repetition and stability.

Inventions were few and relatively infrequent down to the middle of the eighteenth century. In fact, the level of technology was relatively static for thousands of years prior to 1750. At the present time, inventions come in great numbers. A single year often witnesses a number far in excess of those produced in a thousand years previous to 1750. Even such inventions as the aeroplane or the wireless telephone, which would have been regarded as nothing short of miraculous a century ago, are now complacently or nonchalantly received. We have become so accustomed now to the every-day occurrence of notable scientific and mechanical achievements that only the most striking inventions attract our attention at all. Furthermore, with the progress of modern technology, inventions are no longer the chance product of a unique genius, but are becoming more and more the inevitable result of

scientific research and experimentation. Given a need for a definite invention, such an invention is well-nigh inevitable, as Professor Ogburn has recently proved by citing numerous inventions arrived at independently and almost synchronously by a number of different inventors. At the present time, the limitations upon inventions are pecuniary rather than scientific. It is not so much a question of whether an invention is possible as of whether it would pay to produce and market it.

Finally, it may be pointed out that, with the number and rapidity of modern inventions, contemporary civilization has assumed a dynamic character quite foreign to that of any earlier age. The chief danger in this situation is to be found in the possibility that in creating this wonderful technical equipment, mankind will not be able to carry out with sufficient rapidity the desirable social and economic readjustments which are necessary to handle successfully the new technical equipment. There is a grave risk that modern scientists and inventors have created a Frankenstein monster quite capable of destroying modern civilization. As Will Irwin has shown, there is special danger in the growing efficiency of the engines of destruction utilized in modern war. Indeed, it is highly probable, unless we are able to avert future wars, that modern technology will be little more than an instrument for collective human suicide. At the same time, modern technology has put at the disposal of man a potential means for increasing human welfare and comforts to a far greater degree than anything else which has ever been devised through the ingenuity of man. The future alone can determine whether or not humanity can be safely entrusted with this new machinery.

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CHAPTER VI

THE FACTORY SYSTEM

I. WEAKNESSES OF THE PUTTING-OUT SYSTEM

THE putting-out or domestic system of industry had incurable defects, notably the waste of time in distributing raw material and collecting the finished product, the impossibility of proper supervision, and, as a natural result of these, considerable loafing and dishonesty on the part of employees. It will be recalled that the system attained its great vogue at a time when gild opposition had prevented a more natural consolidation of industrial plants in the towns. Once national governmental regulation had curbed the gilds, cotton manufacturing grew up chiefly outside their jurisdiction. The general movement toward new localities where water-power, iron and coal were available set in, and industry was again drawn into towns by the force of greater economy. This was merely a resumption of the natural course of economic development which had been clearly visible in Italy and the Low Countries at the close of the Middle Ages. It was now given irresistible force by the introduction of power-driven machines.

Improvements in transportation had so enlarged the manufacturer's possible market that he could sell a great number of articles exactly alike. Each process could now be broken up into many routine operations, performed chiefly by machines merely supervised by the workers. Not only were these machines too expensive for the individual workman to own, but each was linked up with all the others which contributed their operations to a general process like the turning of cotton fiber into finished cloth. Such machines had to be

installed where power to drive them was available, which was rarely true of workmen's homes. In those days, before the development of electrical appliances, power was transmitted by shafting and belts, which meant that it must be used fairly close to its source.

The gradual transition from hand weaving to factory looms illustrates the general change. There were many weavers in central shops in England before the power-loom was invented. In those cases, the more economical machinery was installed and the shop became a factory. Hand weavers who still worked in their homes were gradually driven out of business as the power machines were perfected and did the work too cheaply for the single operator to compete with them. The hand worker was obliged to seek employment in the factory or take up some other occupation which would yield a living. The factory soon proved itself a larger and more efficient type of human organization for industry. Its general acceptance was therefore inevitable, and desirable, in spite of the revolutionary social changes it involved, and the disorder and suffering which some of these entailed.

II. MAIN ASPECTS OF THE FACTORY SYSTEM

Of the leading characteristics of the factory system, the most striking is the assembly of a larger number of workmen in one establishment than was the case in any earlier type of industrial discipline. While an establishment might be regarded as a factory when it employs only a score or so of workmen, the characteristic modern factory has hundreds or thousands of employees. Even the smallest factories normally employ a greater number of people than were ever brought together in any ordinary guild establishment.

The factory system also offers a greater opportunity for the control, supervision and discipline of labor. As compared with the earlier gildsmen, modern factory workers are

normally more at the mercy of the employing class than was the case when the journeymen might become masters and tools were inexpensive. The superior discipline in the factory system is even more apparent as compared with the putting-out system, under which the capitalist or his representative visited the employees only sporadically while distributing raw material or collecting finished products. Prior to the development of labor organizations, the factory workers were almost entirely dependent upon the will of the employer, while their daily presence in the plant made possible thorough supervision and discipline.

Not only did the factory conduce to easier control of labor; it rendered such discipline and regimentation absolutely inevitable, if chaos and confusion were not to prevail. A loose supervision based upon personal contacts might have been adequate for the small gild establishment, but was quite insufficient to meet the situation created by the bringing of hundreds of individuals under one roof. It became necessary to have certain rules defining the hours of labor, the assignment of individual tasks, the attitude of the employee in his relations with the employer, details of conduct within the factory, and even the matter of orderly entering and leaving. So elaborate has this code of factory discipline become in some places that its complete and literal application would paralyze the operation of the plant. This situation has been seized upon by certain radical labor organizations, which have practised peaceful sabotage solely by carrying out the rules with great thoroughness and literalness.

The first adequate code of factory discipline was worked out by Sir Richard Arkwright. In fact, his significance in the Industrial Revolution is far greater as a leading organizer of modern industrial discipline than as the promoter of the roller water-frame. Arkwright's own factories proved so successful and his code seemed so adequate that it was widely adopted in Europe, and became the parent and point of departure of the later and more complete ones of the nine-

teenth century. Of late years, observation and experiment have led to a belief that these conventional codes of factory discipline have serious defects with respect to the human personality and its adaptation to industrial activity. They have been criticized for sacrificing to order and regimentation most of the normal human impulses toward creative effort—or for that matter toward any effort whatever beyond the amount compulsory for holding a job. The recognition that there is something wrong in this situation has led to the development of the modern science of personnel management and an attempt to humanize the factory.

Machine technique itself has tended to mechanize the workman, who often carries on a narrowly specialized routine operation throughout most or all of his active career. In this way, all those advantages of special training and repetition of familiar simple motions may be easily realized. Adam Smith pointed out long ago the great advantages inherent in this subdivision of industrial processes, but he never could have foreseen the elaborate and intricate application of the idea in the modern factory. The obvious gain in productivity is of course offset by some loss. Besides the indolence and indifference to craftsmanship incident to a highly regimented factory system, the machine technique itself is charged with producing various occupational nervous disorders. Industrial psychology has been making strenuous efforts to get at the exact causes of such diseases, in order to suggest means of better adapting our manufacturing processes to the human units by and for whom they are carried on.

III. CONDITIONS IN EARLY FACTORIES AND MINES

The misery and uncertainty of working-class life in the Flemish towns at the close of the Middle Ages has attracted the attention of many social and economic historians. Industrial concentration in cities had there produced the prob-

lems of woman and child labor, of unemployment and proletarian exploitation, long before the age of power-driven machines. The later scattering of industry over the countryside, incident to the struggle between the guilds and the rising capitalist class, made the worker fairly independent of his employer. Unemployment was less serious in the country, where land for cultivation might still be had. As long as work continued to be done in the homes, the women and children worked chiefly with the men of their own families. They were certainly overworked, undernourished and badly treated at times. The putting-out system was like the modern sweatshop in many particulars. If misery was not always increased, however, by the introduction of factories, it was at least massed and its horrors made more conspicuous. The English agrarian enclosures following 1740 provided a peculiarly helpless and willing group of laborers for the textile plants and the iron mills. The dispossessed peasants faced the alternative of factory labor or sheer starvation.

When the workers entered the new industrial towns, they did not find well-equipped dwellings, but rather hastily erected shacks and tenements. The factories themselves had arrived so swiftly that most of them were crudely built, from the standpoint of safety and health as well as comfort. For the first time, both women and children were employed on a large scale in work which separated them from their homes during the entire working day. It is estimated that at least three-fourths of the employees in the early cotton factories were either women or children, who could manage most of the machines with relative ease. They were in no position to demand men's wages, or to hold out successfully against even the most repulsive conditions.

Great as were the abuses of woman labor, the most distressing aspect of the new factory system lay in the general employment of young children. Much the worst evil was that connected with the utilization of pauper apprentices. Great numbers of poor children who were supported out of

the poor rates were to be found in the cities of southern England. As soon as there developed a demand for child labor, the poor authorities tended to farm out these apprentices to manufacturers in the northern towns. Once the authorities of London, for example, had sent these children out of that part of the country and given up control over them, there was no one to look after their interests. The only curb upon employers was the fear of starvation, epidemics or a mortality so terrific as actually to create a scarcity of labor. Some of the worst working conditions revealed by the various factory investigations existed among these "apprenticed" pauper children. Hours of work in the factories were excessive, and the wages paid ridiculously low. Sixteen- and eighteen-hour days were not uncommon for children under fourteen years of age. From fourteen to sixteen hours constituted a normal working day. The following testimony of a father of two working boys given to the factory commissioners in 1833 is typical:¹

My two sons (one ten, the other thirteen) work at the Milnes' factory at Lenton. They go at half past five in the morning; don't stop at breakfast or tea time. They stop at dinner half an hour. Come home at a quarter before ten. They used to work until ten, sometimes eleven, sometimes twelve. They earn between them 6s. 2d. per week. One of them, the eldest, worked at Wilson's for two years at 2s. 3d. per week. He left because the overlooker beat him and loosened a tooth for him. I complained, and they turned him away for it. They have been gone to work sixteen hours now; they will be very tired when they come home at half past nine. I have a deal of trouble to get 'em up in the morning. I have been obliged to beat 'em with a strap in their shirts, and to pinch 'em, in order to get them well awake. It made me cry to be obliged to do it.

Along with these atrocious hours went extremely inade-

¹ Robinson and Beard, *Readings in Modern European History*, Vol. II, p. 283.

quate wages. The following table taken from Bowley's *Wages of the Nineteenth Century* indicates the average weekly wage paid at various representative periods to the leading types of male English laborers since 1795:

	1795	1807	1824	1833	1867	1897
	<i>s d</i>	<i>s d</i>	<i>s d</i>	<i>s d</i>	<i>s d</i>	<i>s d</i>
London artisan	25 0	30 0	30 0	28 0	36 0	40 0
Provincial artisan	17 0	22 0	24 0	22 0	27 0	34 0
Town laborer	12 0	14 0	16 0	14 0	20 0	25 0
Agricultural laborer	9 0	13 0	9 6	10 6	14 0	16 0

These figures are for men. The highest (forty shillings, for London in 1897) is equal to ten dollars, the lowest only two dollars and twenty-five cents, per week. The payment to women and children was, of course, much lower, averaging from four to nine shillings per week. While wages have risen since the opening of the nineteenth century, the unskilled laborers in England have tended to hover around the line of primary poverty, a goodly number living below this line, as Booth and Rowntree showed in their famous studies of living conditions in London and York at the beginning of the twentieth century. Booth showed that approximately thirty-one per cent. of the population of London lived below the poverty line, while in York, Rowntree revealed the fact that approximately twenty-eight per cent. were in poverty.

The moral situation in the new factories was not less deplorable than the economic. In many cases women were compelled to submit to involuntary prostitution in order to hold their positions, and it was a common saying in England in the first half of the nineteenth century that "Every man's factory is his harem." Immoral relations with women employees were not limited to the owners or managers of factories, but existed with subordinate foremen as well. In fact there was often general moral degradation within the factory, the results of which were rendered even more distressing on account of the presence of numbers of children.

A large amount of illegitimacy naturally grew out of these illicit relations. The moral and social conditions in the life of the working classes in the new towns outside of working hours were little if any better. Healthy forms of recreation being denied them through both poverty and the long working day, drunkenness and immorality were strikingly prevalent as about the only available methods of breaking the unspeakable monotony of industrial life.

Even the most elementary hygienic laws were ignored. Little or no consideration was given to adequate ventilation or heating. The factories were often filled with tepid and steamy air in the summer season and were excessively cold in the winter. No provision whatever was made for rest rooms or any of the other comforts now common in the well-equipped modern factory. Safety devices were unknown. The machinery was unprovided with guards to protect workers from rapidly revolving wheels, or from being drawn into gears or whirled about shafts. Fatal accidents were frightfully frequent and maiming even more common. The relatives of the deceased or injured were rarely able to collect damages, because at that time the law which prevailed was the so-called common law rule that no damages could be collected unless it could be shown that the employer was directly responsible for the accident. This was practically impossible, because of the employer's superior capacity to engage clever counsel and prove that the employee or some "fellow-servant" had been guilty of negligence.

Such were the conditions in most English factories of the first half of the nineteenth century as revealed by a series of public and private investigations. There still remained a considerable number of handicraft workers in England as late as 1825, chiefly in the weaving and the boot and shoe industries. The introduction of improved looms after 1825 gradually but surely made the competition of these handicraft workers with the machine technique and the factory system more difficult. The hand weavers were slowly driven

out of the field before 1850, and those in the boot and shoe industry during the next generation. There are still some handicraft workers in certain special trades, but the great bulk of modern industry is now located within the factory. It seems rather obvious that any plan for improving the lot of the factory worker must rest upon some adequate scheme for creating a new set of conditions within the factory and not upon such proposals as those of John Ruskin for closing the factories and returning to handicraft economy.

Labor conditions in the mines of England at this time were even worse than those which prevailed in the factories. Women and children were extensively employed in underground pits from twelve to sixteen hours per day. Women were utilized to push or draw coal carts, particularly in places where the roof was too low to allow a donkey to pass through. Children four and five years of age were used in the mines as "trappers," opening and closing doors for the passage of carts of coal. The wages paid to these women and children were scandalously inadequate, averaging from two shillings six pence for the young children to twelve shillings per week for the very best women. The following brief citation from the valuable work of Doctor Isabel Simeral on *Reform Movements in Behalf of Women and Children in England of the Early Nineteenth Century, and the Agents of Those Reforms* gives a graphic summary of some of the typical conditions which prevailed:²

The work of these babies was usually that of "trappers." They sat beside the traps or doors in the coal seams through which the coal carts were passed to the roads leading to the main road where the coal was placed to be removed to the surface. It was dangerous to leave a door open as it caused great heat, closeness, and a possible explosion. These babies, then, sat in a spot hollowed out in the wall and when they heard the approach of a coal cart pulled open the trap by means of a cord and closed it after the cart had passed.

² Isabel Simeral, *op. cit.*, pp. 109-11.

They worked for twelve and fourteen hours daily with no light except what some kindly disposed miner was willing to give them in the shape of candle ends. The places were usually damp and no matter how monotonous the labor, the strap was applied if they delayed or endangered the work by falling asleep. They never saw sunlight except upon Sunday, and had no relaxation whatsoever except upon that day. Hodder, the biographer of Lord Ashley who uncovered the situation, says that instances were known where highly sensitive children became imbeciles from the fright of darkness, loneliness, and the vermin with which the mines were frequently infested. The seams were sometimes only twenty-two to twenty-eight inches high and only tiny children could pass through at all.

In Scotland conditions were even worse than in England. As children grew older they became "hurriers" (those who dragged the baskets or carts from the seam to the main road and back), "fillers" (those who filled the carts or corves, which were large baskets), "riddlers," "tippers," etc. The "hurriers" dragged the cart or corve (basket) filled with coal by a chain fastened to the cart and to a belt or girdle fastened around the waist. They moved on all fours, the chain passing between the legs. Women and girls were found doing this work, their only clothing being ragged breeches, and their sides blistered and raw from the girdle. . . .

One of the worst features in the labor of the women and girls was the fact that the men usually worked entirely naked, and as each miner had a section at some distance from every other miner, and worked it alone with the assistance of his feminine "hurrier," the moral conditions were unspeakable. Women performed all the work of mining except the actual digging out of the coal with the picks; they dragged the carts by chains, they filled them, they carried coal in baskets on their backs, they labored when just about to become mothers. One woman told that she had had four children,—two born dead and the other two died immediately after birth. Another that she had borne eight children of whom four were born dead.

Another notorious and terrible situation was that presented by the chimney sweeps. Many of the early chimneys were less than a foot square inside. Children were taken at

three or four years of age—and frequently stolen—for this work. They were pushed up through chimneys, often while still hot. Many were burned to death, lost in side flues or smothered. Of course permanent disfigurement or loss of eyesight was commoner than death outright. The hardest child could not get used to the work for many months. These unfortunates were treated practically like animals, having their food thrown to them and often going unwashed for years. Some firms cynically advertised “small children for small chimneys.” Serious attempts to abolish the atrocious evil by law were initiated as early as 1804, but they were repeatedly blocked in Parliament, especially in the House of Lords, by the wealthy interests. The disappearance of child chimney sweeps some three decades later was due to the introduction of larger chimneys and mechanical sweepers, which made the old method uneconomical—aided to some extent by a more humanitarian state of public opinion in the reforming 'thirties.

IV. THE MOVEMENT FOR FACTORY REFORM

The alleviation of such conditions was a slow historical process of getting accustomed to a new type of industrial society. At first the peasants and artisans set afloat by the break-up of the old order were utterly alien to their new masters; but the two classes gradually got used to dealing with each other. The worst early factories were those situated outside cities, where they could use the water-power of streams. With the growth of larger communities around these, and also with the increasing use of coal, which brought the factory into the town, outsiders became conscious of the dreadful working conditions, and it was possible to mobilize public opinion against them. The general movement into towns increased the congestion, but this very fact brought many problems of the newer type of city to a head in such a way that something had to be done about

them. It also became obvious that the idealism and democratic enthusiasm of the end of the eighteenth century were not dead, but only temporarily bewildered by the currents of revolution, war and industrial change which had swept down upon them.

At the outset, really significant factory legislation in England was born of economic, class and political rivalry. The new industrialists, by their efforts to secure fair political representation and free trade for their new commerce, challenged the interests and class pride of the Tory landlords. The free-trade movement, beginning in the 'twenties of the nineteenth century, and the Reform Bill of 1832 illustrate this bourgeois trend. The Tories retaliated by attacking the industrialists at their weakest point, namely, the factory conditions. They launched a movement for factory reform, enforced by adequate legislation, that by 1847 had borne fruit to the extent of a ten-hour bill. The leaders of this "Tory socialism" were Anthony Ashley Cooper, seventh Earl of Shaftesbury, Michael T. Sadler, Richard Oastler and John Fielden, the latter an enlightened manufacturer. We would not deny altruistic motives to these reformers, but their support grew chiefly out of class rivalry.

Early English factory acts of 1802 and 1819 remained dead letters for want of ample provision for enforcement. The earlier act at least established the principle that children under nine should not be employed and that no child should work more than twelve hours a day. In 1833, a really impressive law was applied to textile mills. Employment of children under nine was prohibited, and a minimum of nine hours a day or forty-eight per week was established for those under thirteen years of age. No person under eighteen could be worked more than twelve hours of any day or sixty-nine of any week. Night work was prohibited altogether, and two hours' school attendance daily was made obligatory for children under thirteen. Allowances to paupers not in institutions were discontinued in 1834, and poor people

allowed to move from parishes where there was no work. About a seventh of the population had been getting aid from the government, at an annual cost of some forty-two millions of dollars. Most important of all, the local poor administration was genuinely organized for the first time in the Poor Law of 1834. The period of bewilderment and fiscal anarchy, introduced by the Industrial Revolution and the unbridled reign of laissez-faire notions, was drawing to a close.

The full horror of the situation in the mines was presented to Parliament in a report of 1842. As a result women and young children were excluded from such work, and the employment of boys over ten was restricted to three days a week. Women's hours in factories were limited to twelve in 1844, and those of children under thirteen were reduced from nine to six and a half. Then came the famous "Ten Hour Bill" of 1847, limiting the labor of women and children to ten hours per day. Factory organization at the time rendered it necessary to extend the operation of the act to male employees as well, because the factories could not be operated without the women and children. Other important acts were passed in 1850, 1878 and 1901, and a vast fabric of protective legislation and regulations has grown up. The growth of labor unions will be dealt with later. A widening franchise for the working classes and the development of popular education have also been notable features of mankind's attempt to meet the new economic conditions with a more intricate and suitable type of social organization.

Factory conditions were never quite so bad on a wide scale elsewhere as they were in England. France never became so thoroughly industrialized. The same is true of the other European states with the exception of Germany. In Germany the Industrial Revolution had not advanced far before Bismarck introduced his system of factory legislation which protected the workers from the worst abuses which had existed in England. In the United States the

scarcity of workers and the existence of cheap land prevented the same degree of oppression of the workers which prevailed in England. Still, the following schedule of working hours in a leading factory in Fall River in 1817 indicates that the laborers were far from the forty-four-hour week in those days:

Work started at five A. M. if light permitted.
One-half hour off for breakfast at eight A. M.
Half hour for lunch at twelve M.
Quit work at seven-thirty.

Adult males laboring in the above factory received at this time from eighty-three cents to a dollar per day, while women and children received from two to three dollars a week.

Owing to administrative and juristic difficulties and confusion inherent in our federal system of government and also due to our laissez-faire philosophy, the United States has made less progress than most European states in the matter of protective factory legislation. Some states have admirable codes and others have made little progress in protecting labor. The most deplorable situation is now to be found in the southern textile industries, where conditions often resemble those which existed in New England seventy-five years ago. A child labor amendment to the federal Constitution is before the country, but there is little probability of its immediate adoption.

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CHAPTER VII

THE NEW CAPITALISM AND THE PROLETARIAN CHALLENGE

I. THE TRANSIT OF THE INDUSTRIAL REVOLUTION

IN AN earlier chapter we indicated that the Industrial Revolution first took root decisively in England following the middle of the eighteenth century for reasons which we stated. It is, of course, misleading to speak of the Industrial Revolution as anything in the past—as a finished epoch. It may well be that we are as yet in the mere infancy of this great movement. Certain it is that what might almost be called a second Industrial Revolution began to set in about 1890 with the great expansion of the iron and steel industry, the origins of the new chemical enterprises, the internal-combustion engine, the automobile, air navigation, the radio and many other novel developments. We can, however, point out the main facts concerning the transit of the earlier stages of the Industrial Revolution from England to the continental and oversea areas.

There were some steps taken toward mechanical enterprise and capitalistic activities in France, Flanders and the Low Countries in the eighteenth century, but the Industrial Revolution proper came to France chiefly after 1825 and was particularly fostered by Guizot and the bourgeois supporters of the July Monarchy. France has never adopted the mechanical technique and the large-scale factory system to any such degree as England, agrarian life and fine handicraft work having lingered with great tenacity. Germany took over the Industrial Revolution with great thoroughness and rapidity after the close of the Franco-Prussian War of 1870-71. She made almost as much progress in the next

two decades as England had achieved in the previous century. Of all the continental states Germany has been by far the most successful in exploiting modern mechanical technology and applied science, and was regarded by many in 1914 as the foremost industrial state of the world. Italy took some steps toward putting her textile industry on a mechanical basis after 1850 under the auspices of Cavour. But such activities have been confined chiefly to the northern part. Italy has been able to make but little headway in the iron and steel industry because of lack of coal and iron ore. The absence of coal may be in part compensated for ultimately through the development of electricity on the basis of the remarkable water-power resources of Italy. Austria made some advances in industrialism after 1870, chiefly in Bohemia, but she has never approximated Germany in her industrial life. Hungary, in particular, remained an agricultural country, her chief manufacturing industry being flour-milling. Russia was in no sense deeply touched by the Industrial Revolution during the nineteenth century. Textile manufacturing began on a modest scale in Poland and around Moscow and the iron and steel industries made some start in the Ural Mountains and in the Black Sea area, but the natural resources of Russia, destined to make her some day one of the great industrial states, have scarcely been scratched as yet.

The United States was the first oversea area to appropriate the new industrial order. The textile industry in the cotton branch was established in New England and the North Atlantic states following 1789. The boot and shoe industry gradually took root in New England about the middle of the nineteenth century. The woolen branch of the textile industry and the iron and steel industries got a real foothold during the period of Civil War and Reconstruction. In the twentieth century the automobile industry has attained a development in the United States far surpassing its status elsewhere in the world. In the last two decades the new

industrial era has been dawning in the Argentine Republic. In the Old World the more notable examples of gradual industrialization have been Japan, Australasia and South Africa. Japan has been the most successful of the Oriental states, comparing in this respect with Germany in the Occident.

II. INCREASED PRODUCTION, IMPERIALISM AND THE RISE OF THE NEW PROTECTIONISM

1. *Increased Industrial Productivity*

The new technology and factory system led to an enormous increase in the volume and variety of commodities produced for sale, greatly stimulated commerce and the development of the commercial classes, and led to a feverish search for wider markets both at home and in areas overseas. The following brief table giving the value of manufactured cotton goods exported from England at representative periods from 1710 to 1871 illustrates this:

Year	Exports of Cotton Manufactures (thousands of pounds sterling)
1710	5
1751	45
1780	355
1790	1,662
1800	5,406
1831	17,200
1851	30,000
1871	72,800

Cast iron is another of the most typical products of the new industry. In 1800, the world production was about 825,000 tons. By 1850 its production in England had increased to 4,750,000 tons. The figure rose to 12,053,000 tons in 1870 and to 40,198,000 in 1900. Nineteen hundred thirteen was the peak year, over 80,000,000 tons being produced. Since the war there has been a slump, the poorest year, 1921, being

about equal to 1900. Coal production increased from 11,600,000 tons in 1800 to 81,400,000 tons in 1850, and to 1,141,000,000 in 1910.

Statistics of American industrial development equally well reflect this amazing expansion of productivity in the last three-quarters of a century:

1. Total Value of Manufactures	
1850	\$ 1,019,000,000
1860	1,886,000,000
1870	4,232,000,000
1880	5,369,000,000
1890	9,372,000,000
1900	11,406,000,000
1910	22,100,000,000
1915	26,300,000,000
2. Mineral Products	
1870	\$ 200,000,000
1881	400,000,000
1890	606,000,000
1900	1,000,000,000
1918	3,500,000,000
3. Pig-Iron—Tons	
1870	1,665,000
1880	3,897,000
1890	9,353,000
1900	14,000,000
1910	27,636,000
1917	38,647,000
4. Steel—Tons	
1880	1,267,000
1890	4,346,000
1900	10,382,000
1910	26,512,000
1917	45,060,000
5. Crude Petroleum	
1860	500,000 bbls. (42 gals.)
1870	5,260,000 bbls.
1880	26,286,000 bbls.
1890	45,823,000 bbls.
1900	63,620,000 bbls.
1910	209,557,000 bbls.
1917	335,000,000 bbls. (value \$522,000,000)

The increased productivity of which these figures are illustrative was reflected in the stimulation of world commerce, which rose during the nineteenth century from about

one and a half billions of dollars in value to over twenty billions. This was again practically doubled between 1900 and 1913. Europe carried on about three-fourths of this trade at the opening of the nineteenth century, and about two-thirds at the close. All the continents shared in the increase. The gain of the other continents relative to Europe has been, however, surprisingly small. If we should group together Europe and the territories actually settled by Europeans, such as the United States, Canada, Argentina and Australia, the apparent relative loss of trade by Europeans would practically disappear.

2. Imperialism and the Search for World Markets

The swelling volume of manufactured products led to an ever more effective effort to secure wider markets. While the most important of these were found in the more advanced and densely populated states of the world, the beliefs inherited from the earlier colonial era led many to feel that adequate markets could only be found in new and undeveloped territories, especially in colonies. This conviction has played its part in the growth of modern colonialism since 1870, which will later be taken up in some detail as national imperialism. The decade following 1870 was a sort of turning-point, according to the beliefs of many economists, because about this time the new industrialism reached a point in its growth where it seemed that production was out-running the world markets. Selling competition between a number of great industrial nations became keen, and business people began to bring pressure upon their governments to acquire colonies or protectorates in regions which furnished indispensable raw materials or promised markets for finished goods. The desire for commercial monopoly has certainly been a factor in the growth of modern imperialism.

Up to the World War, at least, the wisdom of attempting to get exclusive trade privileges by political means was not

fully demonstrated. Most of the colonies acquired after 1870 provided relatively little demand for European products, and many were expensive to maintain and administer. England, for example, was a far more important purchaser of German products than the whole German colonial empire. The fact that people of various nations looked forward to a period of even more serious competition for raw materials and markets was, nevertheless, a first-rate factor in economic and commercial history. It gave a very great impulse to colonial aspirations and led to the exploration and settlement of those large areas of the earth which had not been visited or explored as a result of the earlier Commercial Revolution and the first era of colonialism.

3. *The Expansion of World Trade*

More important than economic imperialism as a reflection of the growth of trade since the Industrial Revolution are, of course, the commercial statistics themselves, which testify eloquently to the expansion of world trade since 1800. The growth of the foreign commerce of the world, gross and per capita, is well indicated by the following table (from Day, *History of Commerce*):

<i>Year</i>	<i>Gross Commerce</i>	<i>Commerce per capita</i>
1800	\$ 1,400,000,000	\$ 2.31
1820	1,600,000,000	2.13
1830	1,900,000,000	2.34
1840	2,700,000,000	2.93
1850	4,000,000,000	3.76
1860	7,200,000,000	6.01
1870	10,600,000,000	8.14
1880	14,700,000,000	10.26
1890	17,500,000,000	11.80
1900	20,100,000,000	13.02
1910	33,600,000,000	20.81
1913	40,400,000,000	24.47

4. *The Movement for Free Trade*

The political and economic theories of the eighteenth and nineteenth centuries, together with the remarkable changes in manufacturing and commerce, combined to produce a notable alteration of trade policies. Beginning with the middle of the eighteenth century, a number of writers in France and England made a vigorous attack upon those old mercantilistic notions and practises which had involved a thoroughgoing state regulation of all forms of commercial and industrial life, particularly oversea trade and colonial enterprise. These writers based their doctrines primarily upon the celestial mechanics and cosmic philosophy of the seventeenth and eighteenth centuries, which maintained that natural order should dominate in economic and social affairs. Hence, they advocated the elimination of all restrictive legislation affecting economic and social life. The most notable of these writers were the French Physiocrats and Adam Smith and his followers in England. There were some important later continental writers who also adhered to this point of view, among whom may be noted J. B. Say and Frédéric Bastiat in France and J. H. von Thünen and K. H. Rau in Germany.

Down to about 1820, this reaction against Mercantilism had taken the form chiefly of polemical writings and oral argument, but from 1820 onward there developed a steady movement against restrictive legislation, which brought about far-reaching practical results in the way of the repeal of laws of this type. The first important steps in this direction were taken in Prussia and in England. About 1818, the King of Prussia, in counsel with his two Ministers, von Maassen and von Bülow, took a bold step in removing the internal customs barriers in Prussia and making the state one fiscal unit. These reforms provided for the admitting of raw materials free and for a duty of about ten per cent. on imported manufactures. In the form of a *Zollverein*, this

Prussian system was, by 1842, extended to all the leading German states, except Austria. In this manner, the German mercantilistic system, or *Cameralism*, was very thoroughly weakened.

Shortly after this the movement against trade restriction took a practical form in England. Under the leadership of William Huskisson, President of the Board of Trade, an organized effort began about 1820 looking toward the reduction of customs duties on certain products and the elimination of duties on others. In addition, a series of reciprocity treaties were negotiated following 1820. Huskisson was killed in a railroad accident in 1830, but the spirit of his work continued, and in 1833 there occurred a very thoroughgoing reduction in duties on commodities imported into England.

The next important stage of the trade liberalization movement in England related to the "corn laws." The corn laws embodied legislation providing for heavy duties on wheat imported into England. Such laws had been in existence from the time of medieval England, but toward the close of the Napoleonic Wars and immediately following Waterloo this obstruction of the importation of wheat into England was made much more stringent. Exorbitant duties existed except when the price of grain was high; in other words, grain could not be imported in practice except at the time of a general crop failure and famine in England itself. The movement against the corn laws was led by Richard Cobden (1804-65) and John Bright (1811-89), two leading British manufacturers of the Liberal Party. Their campaign was based upon a definite type of economic theory worked out by the followers of Adam Smith. These economists urged that wages tended to equal the cost of subsistence on the part of the laborer. In other words, wages bore a constant and direct relation to the price of food. If food could be made cheaper, lower wages might be paid and the profits of the employer would be larger. Therefore, Cobden and Bright and the manufacturing and commercial classes in

England launched their campaign of enlightenment and propaganda against the corn laws. They felt that if the corn laws were abolished wheat might be imported cheaply and the wages required for labor could be greatly reduced. The anti-corn-law campaign was one of the best organized political and economic movements in modern times. It was carried on from about 1836 to 1846. In the latter year, the Anti-Corn-Law League succeeded in carrying through Parliament a law providing for the abolition of the corn laws on February 1, 1849. With the repeal of the corn laws came legislation removing or reducing duties on other commodities. The movement toward free trade went on, and by 1860 England had become practically a free-trade state. The Cobden reciprocity treaty with France was negotiated this same year (1860). England alone, of all modern industrial and commercial states, was able to withstand the protectionist movement in the latter part of the nineteenth century, and remained a free-trade state down to the outbreak of the World War in 1914.

In France, as in Germany and England, there came to be a distinct trend in the direction of free trade about the middle of the nineteenth century. A campaign for tariff reduction developed in the so-called Orleanist period from 1830-48, led by Frédéric Bastiat (1801-50). Though Bastiat died in 1850, the work which he had started was carried on by Sainte-Beuve, who succeeded in converting Napoleon III to the policy of free trade. From 1852 to 1860 notable progress was made in reducing and eliminating customs duties, and in 1860 the Cobden reciprocity treaty carried France far on the way toward free trade. Other reciprocity treaties were made during this same period with the sanction of Napoleon III. Similar movements toward trade liberalization swept over the greater part of Europe about the middle of the last century. Even in the United States there was comparable progress beginning with the Clay compromise tariff of 1833 and culminating in the very low tariff of 1857. In all these

Western industrial and commercial nations it was not only believed that cheaper food meant cheaper wages, but it was also contended that complete freedom of trade would encourage the growth of industries in every country along the lines which each particular state was best fitted to develop. Moreover, it was asserted that commerce would be greatly stimulated by an economic régime free from any restrictions. The period around the year 1860 represented the temporary triumph of the movement toward free trade or great reduction in tariff schedules.

5. *The Revival of Tariffs: the New Protectionism*

A generation before the free-trade movement had reached its apex about the time of the American Civil War, a new type of protectionist doctrine had been developed by writers such as Friedrich List (1789-1846). List's epoch-making work, entitled *The National System of Political Economy*, was published in 1841. List was a German who in the nineteenth century had been driven out of his native land because of his progressivism. He came to America and became acquainted with the political and economic writings of Alexander Hamilton. He was converted to Hamilton's views on national politics and economics, and elaborated his views in the above-mentioned work and in numerous pamphlets. He contended that there was a wide diversity in the degree of economic evolution in the various states of the world, and that it was necessary for the less developed states to safeguard their growing industries by means of a protective tariff. List's contention was what has become famous in economic theory as the "infant industry argument." He admitted that as soon as a state had reached a condition of developed industrial life, it might then begin to reduce its tariff schedules until they approximated a condition of complete freedom of trade.

The first state to take a step toward the return to protec-

tion was the United States during the Civil War. Following the Morrill Act of 1861 came several tariff bills which were adopted ostensibly as fiscal measures designed to produce the greater national income which was much needed on account of the expenditures caused by the Civil War. Beginning with the act of 1862, the tariff rates were raised, and, when the war was over, there was no successful movement to restore the liberal schedules of the 1857 tariff. In spite of sporadic and temporary downward reductions in 1894 and 1913, the United States has to-day, under the Fordney-McCumber tariff of 1922, the highest tariff schedule in the history of American trade. The first European state to make a break with the free-trade conditions was Germany. Bismarck, though originally a free trader, believed that a protective tariff would be valuable for the stimulation of German home industries and agriculture, would produce a considerable increase of revenue, enabling him successfully to carry through his military increases and his state socialism, and to promote nationalization. The bill was passed on June 7, 1879. Though this tariff of 1879 was fairly successful, it did not satisfy the vested interests, and higher schedules were provided in bills of 1885, 1887 and 1902. The tariff of December 25, 1902, was an extremely high one, forced very largely by the pressure of the great landlords. France followed in the train of Germany by a protectionist measure passed in 1881. As in Germany, this was merely a signal for still higher tariffs to come, and in the acts of 1892 and 1910 the schedules were progressively raised. The other continental European states followed the example of Germany and France toward a general revival of protectionism. Only Great Britain remained aloof. In spite of a vigorous campaign for a return to protectionism, led by Joseph Chamberlain, England decided, in 1905, to retain her free-trade system.

The European tariff system possesses one element which is not so prominent in the tariff regulations of the United

States, namely, the tendency to use the tariff schedules as a mode of economic warfare and pressure during times of political peace. In the United States the tariff is chiefly a commercial and financial affair and embodies a single flat rate to apply to imports from all countries whatever. In Europe tariff measures are frequently used by one state to coerce its neighbors into favorable economic relations. Most European tariff bills provide maximum and minimum rates, with a wide variation of schedules between the maximum and minimum. In case a state will grant very favorable economic concessions, the minimum rates are applied in commercial relations with that particular state. If favorable concessions can not be extracted, then the maximum rates are applied. This European system of discriminatory and differential tariffs has been a prime economic cause of national friction and hatreds. With the possible exception of the struggle for raw materials and markets oversea, it has probably been the most significant economic factor in producing the belligerent spirit in contemporary Europe, thus helping to bring on the World War.

As to the relation of tariffs to national and world welfare, opinions may differ, but it seems that, in general, tariffs are helpful in the earlier stages of economic evolution, in order to protect promising industrial developments which are not as yet fully established. One may possibly go even further and agree with some experts on public finance that indirect taxes are better than direct taxes, and that a tariff for revenue only is one of the best forms of indirect taxation. It is difficult, however, to deny that the high protective tariffs which exist in modern states alongside mature economic development are anything else than a disastrous mode of protecting the vested interests, or that they prevent these countries from enjoying a normal and natural type of economic evolution. There is little question that the world would be much better off if it were able to follow the policy advocated by Adam Smith and allow each state to develop

to a high degree of excellence the particular type of industry which its natural resources, its geographic position and the particular qualities of its population would seem to favor. Protective tariffs have enabled specific vested interests to force a country into many types of industrial endeavor for which there exists little relative justification, and have thus withdrawn national economic efforts from lines of activity which would have been much more productive and desirable. Further, it is certain that modern protective tariffs have been a leading cause of the rise and persistence of monopolies within a state. Many concerns having practical control over the supply of a given commodity within a state, have been able to charge exorbitantly high prices because foreign firms have been unable, on account of the high tariff wall which intervened, to ship in such commodities and sell them at a cheaper price. Nothing could be more effective in reducing the oppressive policies of modern monopolistic concerns than a general freedom of trade throughout the world. Nevertheless, in the light of the fact that the protective tariff system has now become pretty thoroughly engrained in the political and economic system of every modern nation, with the possible exception of England, it is highly probable that any reduction of the tariff rates will have to take place slowly and gradually, in order that modern business may adapt itself to these transformations in a reasonable manner. One can scarcely hope for a rapid and successful transition from the high protective systems which now exist to an era of free trade.

III. THE DEVELOPMENT OF CONTEMPORARY CAPITALISM

1. Increased Capitalization

In 1750, most industry was carried on by hand, and the few manufacturing concerns whose capital ran into the hundreds of thousands of dollars were considered unusual. There

is nothing unusual in our day of trusts, holding companies and *Kartels* about a concern capitalized at hundreds of millions. A manufacturing or a commercial concern with a capital of one hundred thousand dollars in the year 1750 was an exceedingly large and thriving concern, while at the opening of the twentieth century the United States Steel Corporation was incorporated for around a billion dollars. The following table, dealing with twelve representative manufacturing concerns in the United States well indicates the remarkable expansion of capital in modern industrial activities by the opening of the twentieth century:

<i>Company Year Ended</i>	<i>Gross Business</i>	<i>Working Capital</i>	<i>Capital Stock</i>
United States Steel, Dec. 31, 1907..	\$757,014,767	\$261,789,885	\$ 868,583,600
Internat. Harvester, Dec. 31, 1907	78,206,890	77,087,811	120,000,000
General Electric, Jan. 31, 1908..	70,977,168	61,235,724	65,167,400
Westh. Elec. Mfg., Mch. 31, 1907	33,026,240	19,061,807	24,969,000
Lack. Steel, Dec. 31, 1907.....	33,011,410	13,881,340	34,721,400
Republic I. & Steel, June 30, 1907	31,229,423	6,720,000	47,607,900
Beth. Steel, Dec. 31, 1907.....	15,000,000	7,434,573	29,770,000
Am. Steel Foundries, July 31, 1907	19,463,521	4,834,843	17,184,000
Midvale Steel, Oct. 31, 1907.....	.....	1,804,929	750,000
Allis Chalmers, June 30, 1907....	.....	12,522,074	35,790,000
Cambria Steel Co., Dec. 31, 1907	.....	14,597,865	45,000,000
Total		\$730,970,851	\$1,389,570,450

2. *New Credit Institutions: The Commercial and Industrial Bank*

Modern business, conducted on the basis of the machine technique and the factory system, required a far more elaborate commercial technique than had previously been provided to meet the relatively simple necessities of the pre-Industrial Revolution economy. In the first place, the embryonic banking institutions of the seventeenth and eighteenth centuries gave way to highly specialized institutions with enormous resources. A leading bank in a third-class American city to-day normally possesses greater resources than the most powerful bank existing in the world in 1750. A banking-house like that of J. P. Morgan and Company di-

rectly or indirectly controls more than a billion dollars in the way of capitalization or resources. The commercial bank performs a most important service in modern economic life. Its real function is to multiply credit on a large scale. It has been found on the basis of long experience and careful investigations that if a bank keeps on reserve something like one-fifth of its total deposits, it is safe against all reasonable and probable demands which would be made by the depositors. In this way, the modern bank is actually able to multiply the medium of exchange through credit instruments by something like five times what would be available without the service of the bank. Moreover, it is able to make loans at strategic moments which are of untold significance in modern industrial and commercial life. Modern bank checks, drafts, bills of exchange and other similar types of commercial paper are much more important as actual media of exchange than ordinary cash. Only through the assistance of the modern bank is it possible to carry on anything like the volume of business transactions which take place in a given year in the modern economy. Modern commercial banking has been greatly aided by the development of the clearing-house, an organization of the leading banks in any municipality, whereby the matter of balancing mutual credit or indebtedness is greatly facilitated. The total checks drawn upon any bank are set off against those which that particular bank holds against other banks, and no transfer of cash is required beyond what is essential to balance the accounts.

In addition to the commercial and industrial banks, there are specialized banking institutions, such as trust companies and underwriting syndicates. The modern trust company has, however, come more and more to take on the functions and characteristics of the ordinary commercial bank. The underwriting syndicate is an organization which specializes in the sale of securities of some corporation which is about to be established. It performs the valuable functions of putting its reputation and credit behind this proposed new

business organization, thus securing confidence in it and encouraging the sale of its securities. The ordinary savings bank, which by many, particularly in rural districts, is regarded as the typical bank *par excellence* is not, from the standpoint of modern commercial analysis, a bank at all. Rather, it is a place of safe deposit for those who desire to gain a small but certain rate of interest on their deposits. These deposits are normally invested in long-time loans, such as real-estate mortgages. The savings bank does not ordinarily handle any commercial paper whatever, and is rather in the nature of an investment company than a commercial banking institution.

In short, it is the modern bank which has really made possible the development and specialization of the capitalistic class, which was noted above. It is through the banks that the resources of modern capitalism are concentrated and put at the disposal of the investor. The reader need scarcely be reminded that modern banking operations extend far beyond national boundaries. International bills of exchange form the indispensable basis for the actual exchange of commodities between peoples of different states. Their use makes it unnecessary to transport specie from one state to another, except at periodic intervals and then merely enough to balance accounts. Further, it should be pointed out that modern banks hold something like a pivotal position in the organization of modern business and transportation. In general, it may be said that in modern economic life the leading banks of the country form the point of concentration in the control of the financial and business interests of the nation. Usually the directors of the great banks are represented on the board of directors of the great manufacturing corporations and the great transportation companies or vice versa. It is, therefore, worthy of note that the contemporary bank is not only a commercial bank, but is becoming a truly industrial bank as well. The development of the railroads in the last half-century strongly promoted this transformation. Industrial companies were not prominent on the Lon-

don exchange before 1860 or on the New York exchange before 1880.

Our modern banks, like industry and transportation, have shown a notable tendency toward formal and informal combination. The diagram (Figure II) indicates the interrelation and effective combination of the greater banking concerns in New York City, controlling resources of several billion dollars.

Likewise, one should not forget the significance of the great life insurance companies in the United States as money-gathering organizations. They gather more actual money yearly than any other type of financial concern in the country, and put vast sums at the disposal of banks and other institutions for safe investment. The following table indicates the growth and status of life insurance in the United States since 1850:

LIFE INSURANCE: Number of policies and amount of insurance in force in ordinary and industrial companies of the United States, and income, payments, assets, liabilities, and surplus, on December 31, of years specified, 1850 to 1919.

INSURANCE IN FORCE FROM 1850 TO 1919

Year	Ordinary		Industrial		Total	
	Number of policies	Amount	Number of policies	Amount	Number of policies	Amount
		Dollars		Dollars		Dollars
1850	29,407	68,614,189	.....	.....	29,407	68,614,189
1860	60,000	180,000,000	.....	.....	60,000	180,000,000
1870	839,226	2,262,847,000	.....	.....	839,226	2,262,847,000
1880	685,531	1,581,841,706	236,674	20,533,469	922,205	1,602,375,175
1890	1,319,561	3,620,057,439	3,882,914	428,789,342	5,202,475	4,048,846,787
1900	3,176,051	7,093,152,380	11,219,296	1,468,928,342	14,395,347	8,562,080,722
1902	4,160,088	8,701,587,912	13,448,147	1,806,894,473	17,608,235	10,508,482,385
1903	4,694,021	9,593,008,148	14,606,635	1,978,241,009	19,300,656	11,571,249,157
1904	5,507,759	10,412,078,338	15,674,384	2,135,859,103	21,182,143	12,547,937,441
1905	5,621,417	11,054,255,524	16,872,583	2,309,754,235	22,494,000	13,364,009,759
1906	5,792,956	11,253,194,077	17,841,396	2,453,616,207	23,634,352	13,706,810,284
1907	5,945,780	11,486,518,261	18,849,357	2,577,896,941	24,795,137	14,064,415,202
1908	6,164,730	11,850,032,581	19,687,675	2,668,919,696	25,852,405	14,518,952,277
1909	6,534,983	12,513,125,180	21,552,344	2,967,596,031	28,087,327	15,480,721,211
1910	6,954,119	13,227,213,168	23,044,162	3,179,489,541	29,998,281	16,406,702,709
1911	7,693,263	14,578,989,903	24,708,499	3,423,790,536	32,401,762	18,002,780,439
1912	8,159,103	15,555,901,171	26,521,655	3,684,054,893	34,680,758	19,239,956,064
1913	8,774,638	16,587,378,943	28,674,303	3,933,219,429	37,448,941	20,520,598,372
1914	9,045,081	17,425,501,137	30,537,592	4,140,151,191	39,582,673	21,565,652,328
1915	9,890,264	18,349,285,339	32,623,419	4,394,051,492	42,513,683	22,743,336,831
1916	10,698,452	19,868,270,425	34,997,474	4,767,759,910	45,695,926	24,636,030,335
1917	11,581,701	21,965,594,232	37,468,776	5,151,096,538	49,050,477	27,116,690,770
1918	12,768,019	24,167,111,902	40,453,438	5,629,956,453	53,221,457	29,797,068,355
1919	14,460,828	29,274,557,871	43,861,894	6,230,996,056	58,322,722	35,514,553,927

INCOME, PAYMENTS, ASSETS, ETC., FROM 1880 TO 1919

Year	Total income	Total Payments to Policyholders	Assets	Liabilities	Surplus
	Dollars	Dollars	Dollars	Dollars	Dollars
1880	80,537,990	55,881,794	452,680,651	.....	.....
1890	196,938,069	90,007,819	770,972,061	678,681,309	92,290,752
1900	400,603,267	168,687,601	1,742,414,173	1,493,378,709	249,035,464
1902	504,527,705	199,883,721	2,091,822,851	1,798,136,861	293,685,990
1903	553,639,900	225,842,072	2,265,221,193	1,978,823,571	286,397,622
1904	599,081,882	247,052,831	2,498,960,968	2,168,468,641	330,492,427
1905	642,058,530	264,968,883	2,706,186,807	2,372,573,020	333,613,847
1906	667,185,592	287,325,629	2,924,253,848	2,557,049,863	367,203,985
1907	678,656,595	309,696,977	3,052,732,353	2,736,329,746	316,402,607
1908	703,930,149	335,777,925	3,380,294,090	2,939,482,079	440,812,011
1909	748,027,892	360,730,904	3,643,857,971	3,170,492,711	473,365,260
1910	781,011,249	387,302,073	3,875,877,059	3,385,821,478	490,055,571
1911	836,160,804	414,268,448	4,164,491,688	3,645,906,544	518,585,144
1912	893,391,717	448,817,715	4,409,292,521	3,879,825,515	529,467,006
1913	945,586,094	469,588,123	4,658,696,337	4,136,361,869	522,334,468
1914	985,037,362	509,455,142	4,935,252,793	4,364,563,505	570,689,288
1915	1,043,083,337	554,705,320	5,190,310,353	4,648,524,264	541,786,089
1916	1,117,860,328	566,386,275	5,536,607,483	4,966,580,921	570,026,562
1917	1,249,491,387	590,183,247	5,940,622,780	5,335,513,267	605,109,513
1918	1,324,586,741	710,201,684	6,529,620,899	6,201,990,207	327,630,692
1919	1,556,968,189	739,117,418	6,742,577,790	6,426,857,244	315,720,546

¹Figures include 6,211 group insurance contracts for \$1,102,466,268

3. *New Types of Business Organization: The Corporation and Holding Company*

The new business enterprises required also an improved form of industrial organization. In general, so gigantic an investment was required to establish and operate modern business units that the individual ownership or partnership types of industrial organization were no longer adequate. The partnership, while it would provide for a greater accumulation of capital than would be possible under individual ownership, had one fatal defect, namely, the unlimited liability of the partners. In the case of the failure of a partnership, any single partner who might have available resources was liable for the total indebtedness of the partnership, and would be compelled to settle this indebtedness if his fellow partners proved insolvent. The joint-stock company, which had no little popularity in the seventeenth and eighteenth centuries, was a great improvement over the partnership, in that it made possible the concentration of a far greater

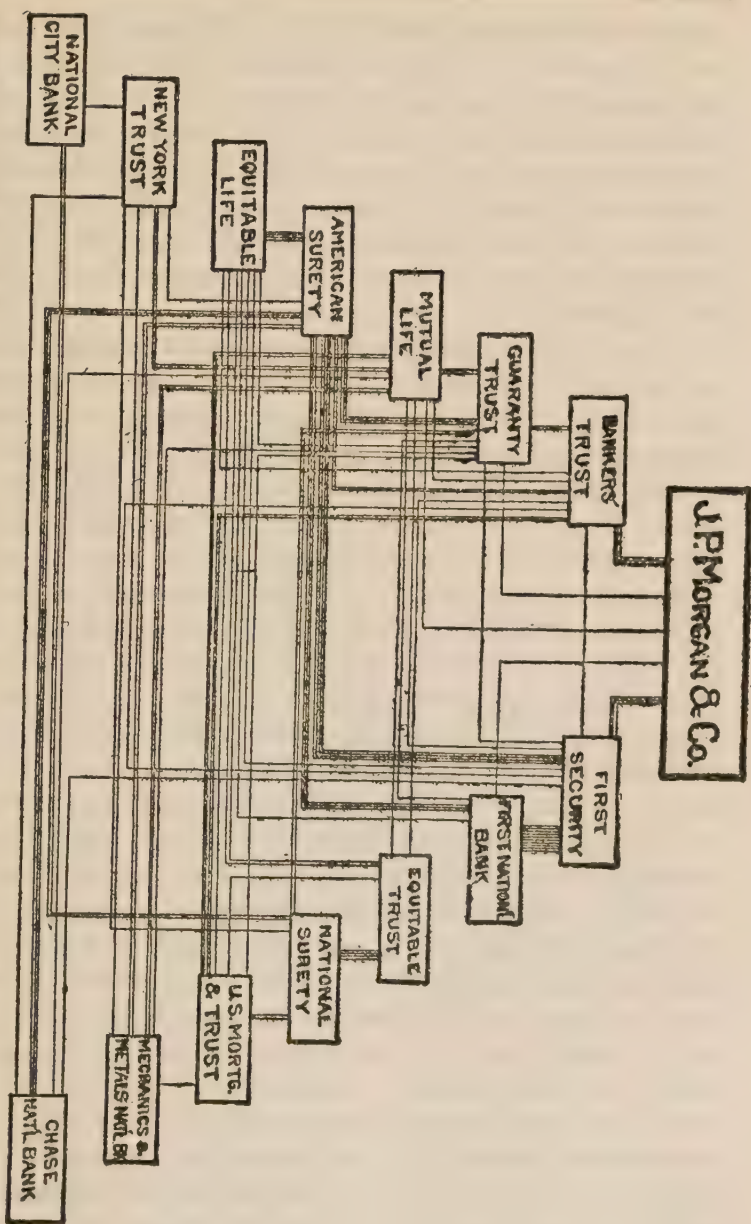


FIGURE II—New York Bank Combine, 1920. Each connecting line represents a directorship

volume of investment, combined with highly centralized control. In general, the joint-stock company possessed most of the commercial advantages of the corporation, but it lacked certain desirable legal characteristics. Except where expressly provided to the contrary through statutory law, the investor in a joint-stock company had the same unlimited liability which threatened the members of a partnership. Further than this, the joint-stock company was not, before the law, a person.

The corporation, which became the typical form of business organization in the nineteenth century, possessed all the advantages of the joint-stock company, together with the two great legal advantages of juristic personality and of liability limited to the proportional investment of each stockholder. There are, of course, other very important advantages inhering in the corporate form of business organization, such as: (1) its permanence, in that its existence is perpetual, in spite of the death of both officers and stockholders; (2) its peculiar capacity to allow for the raising of large sums of capital from individuals widely separated in space and greatly differing in economic capacity; (3) its possibility of combining a wide subscription on the part of the stockholders with a high degree of concentration of control through officers; and, finally, (4) the ease with which ownership of stock may be transferred from one purchaser to another. On account of these undoubted advantages of the corporation, it has become the almost universal type of business organization in modern times, and has contributed very notably to making possible the growth of extensive business establishments. The corporation has greatly facilitated large-scale business organization in another way, namely, in that it makes possible the "holding company"—a corporation devoted solely to the purchase and holding of a majority of the stock of the several original companies which have been thereby combined. The holding company has come to supplant the older trusts.

4. *The Concentration of Industry*

Though the corporate form of business organization provided the well-nigh ideal machinery for large-scale business and commercial combinations, the real dynamic influence producing the modern tendency toward combination and monopoly was the increased advantages inhering in large-scale business enterprise. Two of the most notable phases of this growth of combination have been the concentration of business and the localization of industry. Concentration was produced primarily through the greater economies possible in large-scale production, while localization has been brought about primarily through the greater economic advantages in manufacturing in certain areas which combine proximity to raw material and good shipping facilities. Among the more important advantages of large-scale production are: (1) the opportunity of buying raw materials more cheaply in large quantities; (2) the greater possibility for the development of skill, specialization and the division of labor; (3) smaller overhead costs; (4) the superior selling department which may be maintained; and (5) the greater practicability of a profitable disposition of by-products which would not be feasible in a small concern. As a result of these natural and inherent advantages in large-scale business enterprises, there has been a wide-spread trend in modern economic development toward great concentration of capital investment in gigantic business and commercial enterprises. The tables on the following page indicate, in a rough way, this trend toward concentration in modern American industrial and commercial life:

5. *The Localization of Industry*

The localization of industry, such as the location of the German iron and steel industry in the Ruhr Basin or in Silesia, the centering of the English iron and steel industry

I. Table showing the progress of concentration in all manufactures in the United States, 1850-1910 (from Bogart, *Economic History of the United States*).

	1850	1860	1870	1880	1890	1900	1910
Average product of each establishment.....	\$ 8,280	\$13,420	\$13,420	\$21,100	\$28,070	\$25,418	\$76,993
Average capital of each establishment.....	4,330	7,190	6,720	10,960	19,020	19,269	68,638
Average number of employees of each establishment	7.7	9.3	8.1	10.6	13.8	10.4	25.0

II. MANUFACTURES: Classified according to size of establishment, as measured by the value of products, calendar years 1904, 1909, and 1914.

[Source: Bureau of the Census, Department of Commerce]

Value of product, and year	Establishments		Wage earners		Products		Added by manufacture	
	Number	Per cent of total	Average number	Per cent of total	Value	Per cent of total	Value	Per cent of total
Less than \$5,000:					Dollars		Dollars	
1904.....	71,147	32.9	106,353	1.9	176,128,212	1.2	114,781,124	1.8
1909.....	93,349	34.8	142,430	2.2	222,463,847	1.1	144,346,008	1.7
1914.....	97,061	35.2	129,623	1.8	233,381,081	1.0	151,739,764	1.5
\$5,000 and less than \$20,000:								
1904.....	72,791	33.7	419,466	7.7	751,047,759	5.1	424,129,643	6.7
1909.....	88,988	32.4	470,006	7.1	904,645,664	4.4	509,907,934	6.0
1914.....	87,931	31.9	429,037	6.1	905,693,168	3.7	507,430,875	5.1
\$20,000 and less than \$100,000:								
1904.....	48,096	22.2	1,027,047	18.8	2,129,257,883	14.4	1,090,271,887	17.3
1909.....	57,270	21.3	1,090,449	16.5	2,544,426,711	12.3	1,258,317,991	14.8
1914.....	56,814	20.6	999,600	14.2	2,550,229,411	10.5	1,238,879,430	12.5
\$100,000 and less than \$1,000,000:								
1904.....	22,246	10.3	2,515,064	46.0	6,109,012,538	41.3	2,782,641,883	44.2
1909.....	27,824	10.4	2,896,532	43.8	7,946,935,255	38.4	3,572,746,038	41.9
1914.....	30,166	10.9	3,002,071	42.7	8,763,070,135	36.1	3,888,094,982	39.4
\$1,000,000 and over:								
1904.....	1,900	.9	1,400,453	25.6	5,628,456,171	38.0	1,881,870,216	29.9
1909.....	3,060	1.1	2,015,629	30.5	9,053,580,393	43.8	3,044,043,021	35.7
1914.....	3,819	1.4	2,476,006	35.2	11,794,060,929	48.6	4,092,200,842	41.4
Total:								
1904.....	216,180	100.0	5,468,383	100.0	14,793,902,563	100.0	6,293,694,753	100.0
1909.....	268,491	100.0	6,615,046	100.0	20,872,051,870	100.0	8,529,260,992	100.0
1914.....	275,791	100.0	7,036,337	100.0	24,246,434,724	100.0	9,878,345,893	100.0
Average per establishment:								
1904.....			25		68,433		29,113	
1909.....			25		76,993		31,767	
1914.....			26		87,916		35,818	

around Sheffield and Birmingham, the concentration of the iron and steel industry of the United States around Pittsburgh and Chicago, the localization of the collar and shirt industry at Troy, New York, the development of the oyster industry near Baltimore and the gradual shifting of the cotton textile industry to the South, has been due primarily to the operation of the natural economic forces which inevitably make it profitable to manufacture in those areas adjacent to or intermediate between the sources of the raw materials which enter into the process of manufacturing. In addition to nearness of raw materials, the matter of proximity to markets must be considered, lest the shipment of the finished product be made unusually expensive. In general, this localization of industries has been produced by natural economies, but in some cases it would seem that it has a purely historical basis, in that an industry may have been accidentally established at a certain point and maintained solely as a result of the inertia of custom and precedent. These twin tendencies toward concentration and localization have been two of the most striking aspects of the general development of modern industrial and commercial enterprise since the Industrial Revolution.

6. *The Trend toward Monopoly*

While great concentration of capital in business and commercial enterprise does not necessarily mean monopoly, the growth of modern large-scale business activity has inevitably tended toward monopolistic control of the product. Economists contend that a monopoly exists when a sufficient control over the supply of a particular product has been secured so that a net profit will appear with a decrease in the output. In other words, we have a commercial monopoly when a specific organization is able artificially to control the price of a particular commodity. Such a monopoly may exist as a result of a patent right or copyright, or

through a prior discovery of certain sources of raw materials, but much more frequently modern monopolies have come into being primarily as a result of a concentration of ownership of the various plants carrying on any particular industrial enterprise or of the railroads or steamship lines which control the transportation between given points. In few cases are monopolies complete, but any overwhelming concentration of the control over the manufacturing of a particular commodity or over the transportation lines in any particular area will give what is, for all practical purposes, an essential monopoly, in that it will enable the owners in such a combination practically to control the prices demanded for the commodity or the rates charged for the transportation service.

Many statesmen and economists regard large-scale business combination as in itself a potential benefit to both producer and consumer, on account of the lower costs in production or service which may thereby come into existence. On the other hand, in actual practise, the control over the production of a commodity or over transportation facilities has usually resulted, not so much in cheaper and better service, as in the provision of greater profits to the stockholders in the particular manufacturing and commercial concerns involved.

At the same time, it should be frankly recognized that many great industrial organizations verging upon monopoly, such as the Standard Oil Company, the United States Steel Corporation and the International Harvester Company, have, without doubt, introduced many labor-saving devices and have brought about many technical improvements which have increased to a marked degree the technical and commercial efficiency of the particular type of business involved.

It is this recognition of the potential benefits of big business, together with many actual abuses that have crept in

as a result, which has led to the position of many statesmen like Mr. Roosevelt, who contended that the chief problem which the modern state faces is to secure that type of regulation which will bring about the social and economic advantages of greater economy in large-scale production, and will, at the same time, prevent potential abuses in the way of exorbitant prices or undesirable limitation of output.

Hence, there has been in many states an effort to foster socially desirable types of combination and, at the same time, to prevent monopoly. In general, however, these efforts have not been highly successful. For example, Germany has always endeavored to encourage large-scale production, but without ever having brought into existence anything like the same degree of industrial concentration that exists in the United States. On the other hand, ever since 1890, the United States has, by various laws, endeavored to curb monopoly, with the net result of having at every turn actually increased the size and power of the great monopolistically inclined concerns. Paradoxically enough, both capitalists and socialists regard this increased tendency toward concentration as favorable to their particular views of economic organization and evolution. The capitalist looks upon it as desirable in the way of increasing his industrial power and profits, while the socialist claims that it would be far easier for the state to take over the control of the few great business organizations than to attempt to operate a large number of small-scale concerns.

7. Capitalism and Absentee Ownership

As the amount of capital which could be applied to a single business enterprise increased, a further subdivision and differentiation *within* the capitalist class appeared. More elaborate organization enables the possessor of great

wealth to retire from active contact with industrial and commercial management, applying his resources to economic life through the agency of the industrial and commercial bank, the trust company or the investment broker. Absentee ownership has become fully as feasible in many types of industry as it has long been in agriculture in land-holding countries like England. Active management has gradually come to be handed over to salaried people specially trained in engineering or business administration. In this way, the promoter and the technical and business expert have for the most part taken over the actual running concern, the true capitalist supplying the funds and often dealing only with general policies through his position as stockholder, director or officer. The executive offices of great manufacturing or trading corporations are not infrequently located at a great distance from the mines, factories or docks. Oftentimes the capitalist does not have even the most attenuated personal or official connection with any business concern whatever.

8. *Business Consolidation, Distributed Ownership and Corporate Autocracy*

Another development associated with business consolidation and absentee ownership has been dwelt upon by Professor William Z. Ripley in a striking article, "From Main Street to Wall Street," published in the *Atlantic Monthly* for January, 1926, and later elaborated in a book of that title. Professor Ripley refers to a complex of tendencies in the ownership and control of corporations which have developed in our generation: (1) the rise of the holding company and the growing concentration of control which has accompanied business consolidation; (2) the tendency, particularly since 1914, for the general public to invest widely in corporate securities as a source of private gain; (3) the issuance of

non-voting stock as well as the tendency of the small owners of voting stock to fail to exercise their voting privilege; (4) the actual control of the management of business by a small *bloc* of well-integrated stockholders who act as a unit; (5) the reduction of the percentage of stockholding essential to control management with the growth of business enterprise and the wider distribution of holdings; and (6) the resulting separation of ownership from management, culminating in "stripping the public shareholders of their voting rights," and "the nullification of the ordinary shareholder." We may quote from Professor Ripley's article several significant passages indicating just what is going on and raising serious questions as to the implications for the future of American economic life:

What an amazing tangle this all makes of the theory that ownership of property and responsibility for its efficient, far-sighted, and public-spirited management shall be linked the one to the other. Even the whole theory of business profits, so painstakingly evolved through years of academic ratiocination, goes by the board. All the managers—that is to say, the operating men—are working on salary, their returns, except on the side, being largely independent of the net result of company operation year by year. The motive of self-interest may even have been thrown into the reverse, occasionally, so far as long-time up-building in contradistinction to quick turnover in corporate affairs is concerned. And what has become of the relation between labor and capital? What guaranty may possibly be given by the *real owners* to the working-class that there shall not be taken from it an opportunity for future welfare and development as a result of these changes? Veritably the institution of private property, underlying our whole civilization, is threatened at the root unless we take heed. . . .

Such clauses [limiting stockholders' rights], with devilish ingenuity, look sound enough above the water line; but they certainly will not stand examination in dry dock. For not only has the shareholder parted with every vestige of con-

trol of the enterprise represented by his investment, but now he makes a free gift of such rights as may accrue, resulting from future growth of the property. Heretofore it has been a fundamental rule in corporation law that there shall be no discrimination whatsoever between shareholders. Discrimination there may be between creditors and owners; but by this device even the common shareholders are now set off, to the end that an inordinate share, if indeed not all, of the increment of profits in future shall attach to the holdings of those who are "in the know."

Why do stockholders submit to such indignity? The technique is simple, relying upon a fundamental attribute of human nature. Mr. Robert F. Herrick of Boston, in a frank address on holding companies, describing the manner in which the exchange of shares in one corporation for those of another may be brought about, thus puts it: "All the stockholders act like a flock of sheep. In the main they follow the lead of the directors, and if the details of carrying the plan through are so arranged that the stock in the new company has an apparent money value greater than the stock of the old company for which it is offered, the exchange once started takes place generally, and when a majority of the stock in the companies is exchanged, practically the consolidation is effected." There you have it in the words of an expert! . . .

This [recent investment statistics] betokens a great incursion into the field of investment by the common people—corporate possession being shared by those of moderate and small means with the wealthy class. The movement has been called "an economic revolution"—"the passing of ownership from Wall Street to Main Street." What would be the effect were these new comers—consumers, employees, or others—to discover some day that ownership and control had parted company, each going its way as ships that pass in the night? Suppose that the ownership of many industrial plants, great and small, continues to reside all through the countryside, but that the lodgment of the power of direction has shifted to the great financial centers. We have had experience, to our sorrow, with the old sectional divisions between the East and the West. Is there no smouldering spark in this matter of corporate control, which may some day flare up as a political issue of the first order?

I do not look to Sentinels of the Republic or to anti-syndicalist laws for the ultimate safeguarding of our institutions. Our security, in the last instance, must rest upon the ever-wider prevalence of what Lord Bacon held to be "clear and round dealing among men!" With that assured, we may quite confidently leave all the rest to take care of itself.

There is, of course, another aspect of this movement "from Wall Street to Main Street" which Professor Ripley does not mention, but is of the utmost significance with reference to the ultimate destiny of economic radicalism. With the general diffusion of stockholdings in corporations that are inseparably linked with the capitalistic system and the theory of business enterprise, it is going to be more and more difficult to persuade the more prosperous members of the proletariat and the lower middle class to be willing to risk their economic interests in any overthrow of capitalism and the substitution of proletarian control, founded upon the principle of production for social service instead of private profit. Further, we must reckon with the inevitable human tendency to ape one's superiors and derive satisfaction from psychic association with the economically and socially superior classes. If a person has even a tenuous connection with some important economic organization he is likely to "identify" himself with it rather than with the lower class with whom he associates daily and with whom his real interests lie. A laborer employed by the United States Steel Corporation, who at the same time holds a single share of stock in the concern, is much more likely to identify himself with the Corporation than with the laboring class of which he is a member. It becomes "his" company and the laborer develops a proprietary and protective sense which paralyzes his interest and efficiency as a member of a proletarian, and potentially revolutionary, group. Such a psychology of identification, of course, operates even more widely and immediately with the lower middle class investors.

9. *The Interdependence of Contemporary Economic Enterprise*

Another aspect of the development of contemporary capitalistic enterprise has been the remarkable progress in interdependence between banks, transportation companies, equipment companies, mining establishments and industrial plants. Especially is there a tendency for the ultimate control of both transportation and industry to fall under the sway of the great industrial and commercial banks. There was something more than accident in the recent choice of J. Pierpont Morgan as the head of the United States Steel Corporation. The remarkable interlacing of

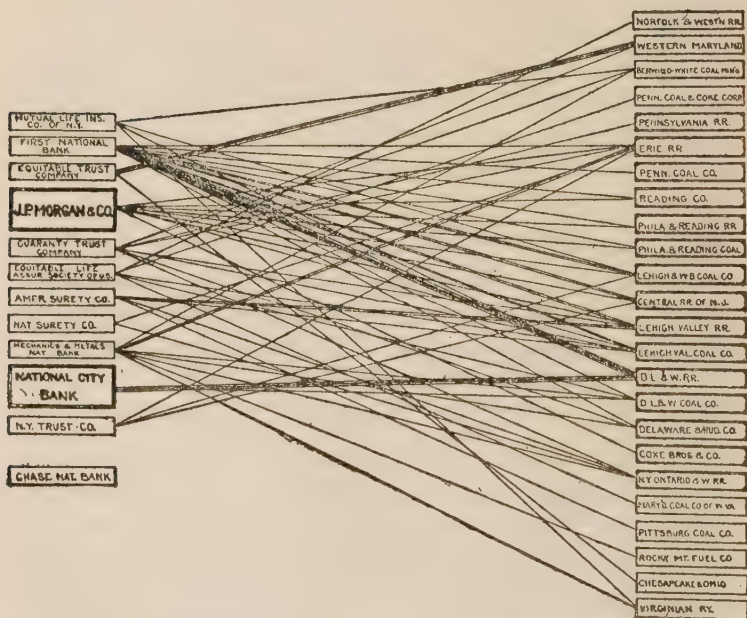


FIGURE III. N. Y. BANK CONTROL OF COAL MINING COMPANIES AND COAL RAILROADS

1920

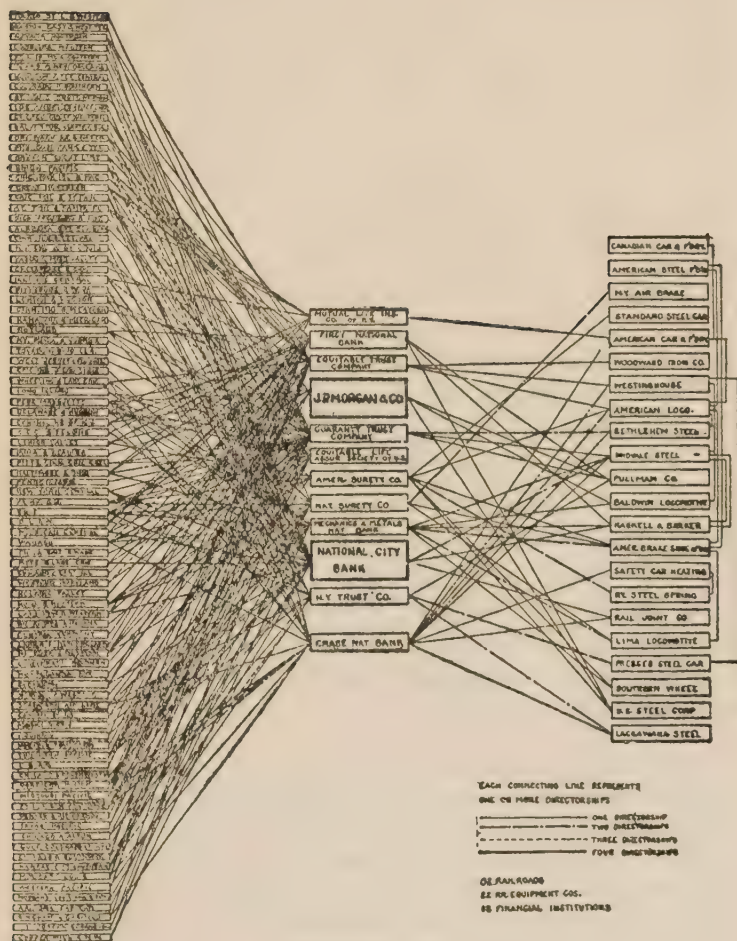


FIGURE IV.
NEW YORK BANK CONTROL OF RAILROADS AND
RAILROAD EQUIPMENT COMPANIES
1920

banks, transportation concerns, mines and industries, together with the ultimate bank domination, are well shown in the accompanying diagrams prepared by the late Senator Robert M. LaFollette for his famous speech of February 21 and 22, 1921, printed in the *Congressional Record* for March 14, 1921.

10. *The Concentration of Wealth*

The enormous increase of pecuniary income from the great financial and industrial enterprises which have arisen as a result of the Industrial Revolution has served to augment personal fortunes to a degree incomprehensible in the days of Alexander Hamilton. George Washington, perhaps the richest American of his period and reputed to have been the first American millionaire, was almost a pauper compared with Henry Ford. Likewise, along with the growth of private wealth, there has come about an unprecedented degree of concentration of wealth in the hands of a few super-bourgeoisie. Mr. Sherwood Eddy presents the following graphic statement of the situation with respect to the growth of fortunes and the concentration of wealth in the United States where there were five millionaires in 1860 and eleven thousand in 1927:¹

In the richest country in the world, the most prosperous known in all history, producing over half of many of the world's most essential goods, it would seem that there could surely be provided, in this one land at least, the simple material basis of the good life for all. Owing to the grossly unequal division of wealth and income, however, such is not the case. Although there is a prosperous middle class of skilled workers and small owners, there is on the one hand a group of enormous fortunes representing wealth, power and privilege unshared, and on the other hand poverty and bitter want unrelieved. Let us examine the facts.

At the top of the financial scale in the United States are 207 multi-millionaires with a declared income of over a

¹ S. Eddy, *Religion and Social Justice*, pp. 14-17.

million dollars a year, according to the figures issued by the Treasury Department in 1927. Somewhat less than five hundred families each possess fortunes rising from twenty millions up to nearly two billions. According to Mr. Joseph S. McCoy of the Treasury Department, there are now approximately 11,000 millionaires in this country, or more than double the number in 1914.

"For the income year 1925, .29 of one per cent. of the population (or less than a third of one per cent.) pay over 95 per cent. of the individual income tax; 17 per cent. pay less than 5 per cent. of the tax, and the remaining 82 per cent. pay no income tax." The New York *Evening World* points out that this means "unprecedented prosperity for those 207 Americans," each with an income of over a million dollars a year, but "a fraction of 1 per cent. makes the greater part of the profits, and that does not indicate a healthy prosperity for the nation. Nor does the fact that 82 per cent. do not make enough to pay any income tax, mean national prosperity."

According to the report of the Federal Trade Commission for 1926, 1 per cent. of the estates in America left 59 per cent. of the wealth, while 13 per cent. owned more than 90 per cent. of the wealth. At the other end of the scale individuals in the non-probated class of the poor left an average of only \$450 at their death.

As pointed out by the Commission on Industrial Relations, "the ownership of wealth in the United States has become concentrated to a degree which it is difficult to grasp." The fortune of Henry Ford, who has repeatedly refused an offer of a billion dollars for his business, is now estimated at from a billion and a half to two billion dollars. With three hundred millions in ready cash, his income is estimated by the New York *World* as nearly two hundred dollars a minute, \$11,415 an hour, \$273,967 a day or about \$80,000,000 a year.

Ten corporations have now passed the billion-dollar mark. These ten corporations control some fifteen billion dollars in assets, or more than five per cent. of the total private wealth of the country. The concentrated control of these corporations is steadily growing. The Federal Trade Commission in its recent reports shows that thirty companies each control a large portion of the bituminous deposits and petroleum reserves;

- 6 companies control one-third of the American water power
- 8 companies control over three-quarters of anthracite deposits
- 4 companies control nearly one-half the copper deposits
- 2 companies control over one-half of iron ore deposits.

A leading article in the conservative *Washington Post* says, "A single group of not more than 20,000 business men is in charge of American prosperity today. . . . This group of men are determining the policies of the nation's leading corporations and are overshadowing all competitors. . . . The stockholders of those 1,200 corporations will receive in dividends half of the net profits of American business." Professors Tugwell, Munro and Stryker of Columbia, at the close of their very conservative survey of "American Economic Life," say: "We have proceeded haphazard and have evolved a system of apportionment that is as indefensible in its logic as it is disastrous in its consequences. . . . Our enormous annual national incomes are badly apportioned; so badly apportioned, in fact, that eighty-six per cent. of our people still live in poverty, while a very few command an immense aggregate control over income that permits them to indulge in such wastes and extravagances as were never known in the world before."

11. *Increasing Gulf between Capital and Labor*

With this growth of capital and concentration of control in business, it was inevitable that a sharper differentiation than ever before should arise between capital and labor. Under the gild system, the apprentices and journeymen in many crafts expected to rise to mastership as a matter of course. The separation of employer and worker into classes was much more marked under the putting-out system, but the talented and ambitious worker still had a very good chance of rising to the position of a merchant capitalist.

With the development of the machine technique and the factory system, so great an investment was required to establish and conduct an industry that only in the most unusual cases could a laborer hope to rise rapidly to the position of a prominent manufacturer or merchant. More and more, the classes which control manufacturing and commercial activities became specialized, exclusive and sharply differentiated from labor.

IV. THE THEORY OF BUSINESS ENTERPRISE AND THE PRICE SYSTEM

Along with the growth of a far more elaborate technique of organization in modern industry and commerce to meet the new economic demands produced by the Industrial Revolution there also developed an equally significant attitude toward economic activities and financial gain. This has been well called by Professor Thorstein Veblen "the theory of business enterprise." In the period of the Orient, Greece and Rome, the notion of the importance of private profit as the chief motive power in industrial and commercial effort was not by any means absent, but it was not developed to any extent comparable to the situation at the present day. The notions of good craftsmanship, excellence of product and the subordination of all individual economic effort to the welfare of the state were the dominant conceptions in the business enterprise of the Greek and Roman world. In the medieval age, under religious control, there was a highly developed sense of social responsibility in the acquisition and use of wealth. Unregulated private business enterprise scarcely existed in this age. Laws preventing engrossing, forestalling and regrating, the general theory of the "just price," and the opposition to the taking of interest well indicate this medieval emphasis upon the social responsibility involved in industrial and commercial enterprise. In fact, all of these types of procedure which were tabooed by

medieval economic attitudes and legislation are now regarded by orthodox economists and jurists as the indispensable foundation of any stable and prosperous business enterprise.

Due to the change of attitude toward business enterprise produced by the Commercial Revolution, the notion of the basic importance of private property in industrial initiative had come into being centuries before the Industrial Revolution had been completed. In the sixteenth, seventeenth and eighteenth centuries, writers on economics, as well as ministers of the Gospel, had openly declared that the making of private profit was not only the indispensable basis of business effort, but also the attitude toward business enterprise which God himself most heartily approved. The belief, then, that private property and unregulated business enterprise were the indispensable prerequisites of any healthy industrial activity was in full being at the time of the Industrial Revolution. What the Industrial Revolution did was not to create this attitude, but to give it far greater scope and significance in modern economic and social life.

The dominant notions of the "theory of business enterprise" or the "pecuniary order" are essentially the following: in the first place, the modern economy may well be called the "bookkeeping economy," in that the results are to be measured quantitatively by means of an investigation of the amount of concrete pecuniary profits made by the concern. Profits are regarded as the main-spring of all industrial effort, and any force or influence which leads to the diminishing of private pecuniary profit is viewed as a fatal obstruction to the development of modern industrial prosperity.

The point of view, then, which determines the excellence and desirability of modern industrial effort is that of the accountant. The volume of profit, rather than the excellence of the product or the adaptability of the product to the actual needs of the population, is the basic factor to be con-

sidered. Of course, goods which are manufactured without there being at the same time an adequate demand for their use would entail serious loss. But the manufacturer does not have to concern himself with whether or not the public needs these goods, if by advertising he can induce the people to *believe* that they need the goods and hence make them willing to purchase such materials. If by advertising he can induce customers to purchase a half-million dollars' worth of goods which they do not actually need, this is exactly as good business enterprise as though he were to sell them a half-million dollars' worth of the primary necessities of life. The degree to which bogus advertising underlies modern business has been recently shown by Chase and Schlink in their striking book, *Your Money's Worth*.

Further, excellence of product need not concern the manufacturer, except in so far as a rather variable minimum of quality must be maintained, lest the demand be reduced. But it is not a social point of view or an interest in craftsmanship which leads him to maintain this minimum of excellence in workmanship; rather it is the purely pecuniary fear of a loss of profits. If, through an interest in craftsmanship or a highly social conception of the function of the manufacturer, a modern employer actually reduces his profits by making a better type of commodity, he is, to the extent of the reduction of his profits, a bad business man, in the light of contemporary criteria of judgment. Again, the modern theory of business enterprise generally ignores long-time estimates as to profits. Immediate pecuniary profit to a particular employer is the basic element considered. Little thought is given as to whether this particular policy may not, in the end, result in economic loss to the particular business involved or to the interests and prestige of the business class as a whole. It is this short-sighted immediacy of pecuniary judgment which has helped on the disastrous series of business cycles of undue prosperity and disastrous depression which have characterized the history of industrial and

commercial activity in every great modern state since the Industrial Revolution.

It is obvious that this attitude toward industrial effort is extremely wasteful and oppressive. It floods the markets with great quantities of inferior and often socially unnecessary or undesirable products and stimulates incomplete consumption through the abandonment of commodities whose services have not been yet exhausted but which are discarded in the interest of whims of fashion or through the seductiveness of advertising. By concentration upon the commercial, rather than the technical, aspects of industry, the possibility of greater technical efficiency and economy is largely ignored. So wasteful is the modern theory of business enterprise in economic productivity that even capitalistically-minded engineers who have investigated the problem contend that we waste about fifty per cent. of our potential productive capacity through the fact of the predominance of the theory of business enterprise, as compared to what we might produce under the domination of the technical and service point of view of the engineer and the social orientation of the sociologist and social economist.

Probably more than anything else, the theory of business enterprise has brought us to our present well-nigh intolerable situation in industrial and commercial life. Not only has it been wasteful in production but it has also squandered the natural resources of the world in a most disastrous manner, and has enormously lessened the productive services of manufacturing enterprise and transportation lines through stock manipulation and other forms of undesirable purely profit-getting activities. It may well be that a satisfactory type of economy and social system can coexist with private property and independent industrial and commercial initiative, but it is becoming more and more apparent that we can have no adequate and permanent type of industrial and social organization which is founded upon this essentially anti-social theory of business enterprise and absentee ownership.

From well-nigh every standpoint, it must meet the condemnation of the objective industrial engineer, economist and sociologist.

It has frequently been urged that the modern business enterpriser and promoter is the man to whom we owe most of the advantages which have been brought to society by modern industrial and commercial life, but this attitude betokens a well-nigh complete ignorance of the processes of industrial evolution. The classes to whom we owe most of the real advances and improvements in economic life which we to-day enjoy are the applied scientists and technicians, who have provided us with the scientific and mechanical foundations of the contemporary economy. Rarely have these individuals been adequately rewarded, the real pecuniary gains which have come about as a result of their efforts having usually been diverted to the business men, who have exploited their achievements. Neither the scientist nor the technician has directly benefited to any conspicuous degree from the efforts of the modern scientist and engineer. To be sure, we owe a great deal to the organizing capacity of great men of industry and finance like Carnegie, Morgan, Rockefeller, Ford and Stinnes, but the great majority of ordinary business men have simply exploited the work of the inventors. The marked distinction between inventors and money-makers, which Professor Taussig has drawn, is an invaluable one for the modern economic historian to keep ever in mind. Such anti-social practises of the business man as stock-gambling, railroad manipulation, misleading advertising and wasteful exploitation of natural resources have really prevented society from making the most of the constructive achievements of the modern scientist and inventor.

Not only has this economically and socially disastrous theory of business enterprise come to prevail on the part of the employer, but it has also come to dominate the point of view of the great majority of modern industrial workers,

particularly that of the better-organized skilled workers. They have come to translate the practises and attitudes of their employer into terms of their own interests and activities. What to the employer are high prices for goods of a poor quality, often socially unnecessary, are to the modern worker high wages for short hours of indifferent and relatively unproductive labor. To be sure, the working man can not be blamed for having at last learned this lesson of business enterprise from his employer after a century or more of constant observation, but it is necessary in the interests of fairness to call attention to the fact that the public suffers from this non-social attitude of the employee in the same way that it does from the employer's adherence to the pecuniary attitude and evaluation.

Nevertheless, in the same way that many employers are coming to realize that their ultimate interests will be best served by observing the fundamental laws of a true economy of effort and the social point of view, so some of the more up-to-date and constructive trade unions are beginning to understand that the old methods of strikes for higher wages, of limitation of output, and lack of interest in craftsmanship and productivity must, in the end, lead to disaster and to the discrediting of the labor movement. Therefore, these progressive and far-seeing unions are coming to embody in their program such things as the elimination of strikes, the substitution of compulsory arbitration and the provision for increased output and greater technical efficiency on the part of labor. In the combined efforts of enlightened employers, who are gradually abandoning the grosser aspects of the theory of business enterprise, and the more enlightened labor leaders, who are emphasizing the necessity of adopting policies which will increase the volume and excellence of productivity, we may gradually hope to escape from the present preposterous and impossible situation in which we are dominated by the expensive and wasteful methods of the price system, or the theory and practises of business enterprise.

V. THE PROLETARIAN CHALLENGE TO CAPITALISM

The industrial proletariat, produced or greatly augmented by the Industrial Revolution, has become more distinct, specific and dependent upon capital. Concentrated in towns and held to a rigid schedule of hours, the workers found it impossible to eke out their living with agriculture, hunting or fishing. In some countries like the United States, free land furnished a possible escape from factory conditions while the frontier lasted; but this factor is no longer important. General and extended unemployment would mean for the average factory worker nothing short of sheer starvation. This extreme dependence of labor upon capital has been characterized by the more radical elements as a temporary type of servility which must be done away with. Their contention, however, that the ultimate form of industrial organization must be one in which labor shall control all the processes and policies of production is, so far at least, little more than vague aspiration and a potential prophecy. In most industrial states, the worker is still dependent to an unprecedented degree upon enterprises maintained by private capital.

Through various forms of protective activity, such as the growth of labor organizations, modern industrial workers have sought to improve their condition, mitigate the effects of unemployment and gain as large a share as possible of the product of their work. So far, this has been chiefly in the way of amelioration, little of a positive nature having been done to alter the worker's dependence upon machinery owned and controlled by others.

Aided by critics of capitalism, the workers in the factory system have gradually extorted a more tolerable attitude toward labor on the part of employers. The earlier capitalist was greatly influenced by the eighteenth-century notion of a "natural order," which was interpreted in economic matters as a régime of unlimited competition. Even the French

Revolutionaries had this idea, as shown by their abolition of the relatively light quit-rents remaining over from the manorial order and their preservation of the much more oppressive *métayer* system because the latter represented contracts entered into by the tenants. In this economic atmosphere, the employer tended to look upon labor in an impersonal manner—as little more than a commodity entering into the process of manufacturing or commercial activity. Preoccupied with his efforts to accumulate capital, and secure pecuniary profit, he did not see that the free competition which he demanded for himself clashed essentially with the restrictive measures from the older order which he wished to impose upon the lower classes. So many of the new urban workers had been recruited from the poorer type of peasants, accustomed to servility, that there was at first astonishingly little resistance from below.

Yet, while the bourgeoisie were still struggling with the landlords for control of the European governments, their own ascendancy was challenged by the new and powerful proletarian element, likewise brought together by the Industrial Revolution. The working classes had been scattered, illiterate and generally docile up to the Industrial Revolution—living mostly in the country. Only when deeply stirred by the grossest abuses did they attempt any concerted action on a large scale, as for example in the sporadic peasants' revolts of medieval and early modern times. The Industrial Revolution concentrated many in relatively small areas. Here they were thrown together in large numbers daily and subjected to common abuses. There inevitably developed a considerable solidarity and no little unanimity of opinion and aspiration among the workers.

Very early they began to conceive of the possible value of the vote, in order that they might influence public policy and secure legislation which would better their lot. Especially irritating were the laws in all European countries at the opening of the nineteenth century forbidding workers to

unite in any way to match their bargaining strength against that of their employers, which was increasing with the size of business units. Obviously, the right of an individual to quit is useless to him unless he can get a job elsewhere. For one man out of a force of five hundred to quit work by himself was seen to be without coercive force upon the employer, whose plant continued to operate as before. On the employer's side, however, lay the effective power to close the plant and throw the whole five hundred out of work. Without either the vote or the right to combine, the worker could not force either the industry or the state to assume or lessen the risks of injury and unemployment.

Therefore, the great political aspiration of the proletariat during the nineteenth century was the realization of universal suffrage. At the opening of the century, the masses were everywhere without the vote; at its close they had gained this right in almost every Western country. (See pp. 284-85.)

The general legalization of unions and associations of working men, which had begun in the 'twenties, was closely associated with the extension of the suffrage. Only a year after the vote was first given to a large English group of workers in 1867, a concession was made to unionism in the establishment of a trade union council, and seven years later (1875) the conspiracy laws were practically withdrawn. Associations were first legalized in Germany in 1868, but unionism was pretty sharply repressed until after 1890. A French law of 1791 had prohibited all labor combinations, but a good deal of surreptitious association took place up to 1848, when the suffrage was established by law. Reaction set in under Louis Napoleon, and unions did not gain toleration until 1864. Both trade unions and strikes were finally legalized by the Syndicat law of 1884. To give two more examples: the Austrian unions were legalized in 1869, following the new liberal constitution of December, 1867; and unions were made lawful in Italy in 1912, though they had long

been in existence. Unionism was not fully tolerated in Russia until after the revolution of 1917.

Working-class influence has permeated practically every department of the economic policies of states, from industrial legislation and social insurance schemes to taxation. It is impossible to estimate the exact weight of the labor vote, primarily because it has not been exerted alone or along purely class lines. Measures protecting the workers in various ways have certainly gone ahead much faster than would have been the case without this proletarian factor. For example, even the German program of social insurance was undertaken by Bismarck largely to placate the masses, and thus stave off an alignment by economic classes which might have produced far more radical changes. This whole question of social reform will be dealt with in some detail later.

In spite of the tremendous numerical preponderance of workers, universal suffrage has not led to working-class rule, but, at the furthest, in a balance of power between the various conflicting and cooperating interests. This suggests either that there is not a laboring-class majority or that the majority does not rule. Obviously, society is not simply and sharply divided into two classes, "labor" and "capital," as some students appear to believe. The truckman who owns his own vehicle and hires a helper is in a real sense a capitalist, though he works with his hands. Even workers for wages or salaries often own shares of the capital stock of corporations, or get part of their income from bonds. Employees in responsible positions, such as cashiers in banks, are often expected to own stock. Those who work with their hands by no means form a homogeneous group, but have their own hierarchies, from the highly paid, unionized specialists, such as the locomotive engineers, down to the common or unskilled laborers. Practically the same is true of capitalists, who range from the great captains of industry and inheritors of huge fortunes down to the widow who lives

entirely but very modestly on the income from securities.

Unquestionably the greatest obstacle to the development of any effective proletarian movement to upset the capitalistic order is to be found in the operation of the mechanism of "identification" referred to earlier in this chapter in connection with the effect of wide stock distribution upon the potential radicalism of the holders. Karl Marx assumed that workers were acutely conscious of their interests and would conduct themselves accordingly. Our experience of the last century has proved the opposite: that the proletariat has shown itself singularly incapable of realizing its real class interests and unbelievably susceptible to seduction by capitalistic propaganda. Social psychology of the old type threw some light on this seemingly perplexing problem by showing how deeply men are affected by custom, convention and tradition, but the newer dynamic psychology has gone much further in clearing up the situation, through its analysis of the mechanism of "identification" and its operation upon the lower classes. Not only the stockholders but even the employees in great businesses tend to identify themselves with the business or family which employs them and in this manner get compensation for their actual lowly status. They thereby build up much more real loyalty to the employing class than they have for their own class of the employed.

Professors Malcolm M. Willey and Melville J. Herskovits have analyzed the operation of this psychic mechanism with great astuteness in their article, "A Note on the Psychology of Servitude," in the *Journal of Social Forces* for March, 1923. It uncovers a situation little discussed before, but unquestionably and beyond comparison the greatest obstacle radical leaders have to contend with and the most potent factor in the psychology of conservatism. We quote a few sections from this article, quite as important and epoch-making in its way as the much more widely noticed article by Professor Ripley:

The problem with which we are presented may then be concisely stated as follows: Why is there to be found this stubborn adherence to this conservative economic philosophy on the part of men who would seem to be the most unlikely ones to hold it in any regard? Why is it the despair of social reformers, labor leaders, and radicals, that a large proportion of the working men are so unresponsive to measures which should, to all intents and purposes, be highly attractive to them? . . .

The notorious contempt of the head-waiter for those, who when coming under his aegis, do not seem "to the manner born," i.e., to be in possession of wealth and breeding, as he conceives the latter, needs only to be mentioned to be conceded. The fear and trepidation with which a person of the upper middle class will approach the ordeal of purchasing a major article of wearing apparel in one of the so-called exclusive shops, has been sufficiently commented upon by the comic weeklies. The haughty disdain with which the chauffeur of the wealthy family regards his master's poor relations has often been noticed. Indeed, it is stated by those who have had occasion to have relations with the great and mighty that it is more of an ordeal to come in contact with their servants and retainers than with the great themselves. . . .

The shivering chauffeur waiting for his master and mistress at the opera boasts proudly to his fellow chauffeurs of the powerfulness of "our" car, the luxuriousness of its appointments, and the splendor of the passengers it carries. He recounts at length the sumptuousness of "our" dinner dance, seemingly holding no rancor, but the greatest regard, for the master and mistress warmly ensconced in the nearby opera-house. While at home the sleepy maid and valet await the coming of their employers with a similar lack of rancor. . . .

The bank clerk who swells with pride at the statement of the huge transactions of the institution which employs him, even though he does not share beyond an occasional small bonus in the profits, is motivated by something much deeper than a rational pride in his participation in the affairs of the bank. . . .

If in the light of the suggestions outlined in this discussion we return to the main problem, it would seem that in this

psychological mechanism of unconscious identification lies the key to an understanding of the reluctance of large groups of workers to respond to the doctrines set forth for their economic betterment. Herein, it is believed, lies the answer to the puzzling occurrence of frequent vehement expositions of the conservative philosophy on the part of those least benefited by the system which they uphold. It is not to be understood that this note is intended to be anything more than a suggestion looking toward more concrete research into this most interesting problem of social psychology. But it is maintained that along these lines, or lines very similar, the explanation is to be had.

Struggles between employers and employees over wages have often injured so many people besides the direct participants that attention has been drawn to a vaguely defined "middle class," generally mentioned as the "public," supposed to occupy a place "between" the urban worker and the capitalist. It is sometimes more definitely indicated as consisting of the professional groups, the lesser manufacturers and merchants, the more highly skilled and successful artisans, and the farming classes. Many of these elements tend to prefer the capitalistic side in labor controversies. There is a marked trend toward organization of professional groups along the lines of labor unions. The reason is obvious in such employments as teaching and the stage, since here it is people who are organizing better to market their services, rather than sums for investment being brought together into artificial "persons" (corporations) to increase interest, profits or rent. "The public" in this sense of a middle class clearly does not correspond exactly with Governor Allen's "party of the third part" in industrial disputes, though in newspaper writing the expression is often so employed. Those who are not parties but are yet affected by such contests include both capitalists and workers in other industries. In fact, *all the consumers* are "the public" in case of a stoppage of a vital economic process—including even the employers and workers who are the parties of the

first and second part in the particular issue, which is usually one of dividing the rewards between two sets of *producers*. Thus the classification of society as producers often runs athwart another which is quite as real, as consumers. The Gild Socialists would frankly recognize both, organizing people as producers into economic-interest groups and as consumers somewhat along the present political lines.

Critics of the present social order often charge it with being undemocratic because the bourgeoisie wield an influence in economic and political matters out of all proportion to their numbers. This condition seems to be inseparable from a régime of private property. In practise it is frequently impossible to draw a line between politics and economics. A very large fraction of the activities of governments, local and otherwise, consists of regulating and protecting the economic order. It is also obvious that it takes money as well as leaders to keep political party organizations afloat. The domination of the bourgeoisie in politics to-day is nothing more than a manifestation of the fact that economic factors are primary and political elements derivative. In Oriental, classical and medieval times the agrarian aristocracy prevailed in political life. The ascendancy of the business classes in politics to-day is nothing more than a reflection of their triumph in society at large. The proletarian domination in Russia is but proof that, when the workers and peasants attain sufficient power, politics will come to express the aspirations and ideals of the classes which are still in a servile position in bourgeois states.

In concluding this section on the proletarian challenge to capitalism it is well to emphasize the fact that the most powerful and significant challenge which has ever been launched is the present experiment of proletarian control in Soviet Russia. Contemporary Russia is a great socio-economic laboratory in which are now being tested, under the greatest of handicaps, some of the basic tenets of proletarian social and economic theory. The facts of Russian industrial

life to-day, as described in such an article as that by Professor Tugwell in the *Political Science Quarterly* for June, 1928, constitute more of a challenge to capitalism than all the vehement rhetoric and verbiage thus far expended in the cause of the proletariat.

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CHAPTER VIII

SOCIAL PHASES OF THE NEW RÉGIME

I. THE FACTORY TOWN AND THE URBAN AGE

OUR urban civilization is a product of the factory system, and is very different from anything which preceded it. City life on the part of a majority of the population is a decided novelty—so new that its results can not be foretold. Athens probably never had a population much over 100,000, and the average in imperial Rome was about five times that figure. In 1800, London had only 864,000 inhabitants, Paris 547,000 and Berlin 172,000. There were only 15 cities in England in 1801 with a population of over 20,000, and added together their population totaled only about 1,500,000. By 1891 there were 185 English cities of over 20,000, with a combined population of over 15,500,000. These figures are characteristic of the changed situation throughout the Western industrial states. The following statistics illustrative of the population growth and occupational distribution in New York City are illuminating with respect to urban situations as they have developed in the century of the Industrial Revolution:

The following tables show in detail the population of all the boroughs of the Greater City since the census records have been kept. The first table gives the total figures each decade; the second measures the increase from period to period.

THE CITY'S POPULATION

(In Thousands)

<i>Year</i>	<i>N.Y.C.</i>	<i>Boroughs</i>				
		<i>Mh'n.</i>	<i>Bronx</i>	<i>Bkln.</i>	<i>Qus.</i>	<i>Rich.</i>
1790	49	33	1	4	6	3
1800	79	60	1	5	6	4
1810	119	96	2	8	7	5
1820	152	123	2	11	8	6
1830	242	202	3	20	9	7
1840	391	312	5	47	14	10
1850	696	515	8	138	18	15
1860	1,174	813	23	279	32	25
1870	1,478	942	37	419	45	33
1880	1,911	1,164	51	599	56	38
1890	2,507	1,441	83	838	87	51
1900	3,437	1,850	200	1,166	152	67
1910	4,766	2,331	430	1,634	284	85
1915	5,047	2,137	615	1,798	396	98
1920	5,620	2,284	732	2,018	469	116
1927	5,970	1,814	926	2,274	809	147

THE CITY'S GROWTH

<i>Decade Ending</i>	<i>Increase of Population (In Thousands)</i>	<i>Per cent. of Increase</i>
1840	149	61
1850	305	78
1860	479	69
1870	303	26
1880	434	29
1890	596	31
1900	930	37
1910	1,330	39
1920	853	18

In the year 2000—which the generation just coming into consciousness will, many of them, live to see—the metropolitan area of New York may contain three times its present population. According to the calculations of Professors Raymond Pearl and Lowell J. Reed of Johns Hopkins, who made the study, the territory where 9,000,000 people now live and move and have their being will contain 29,000,000 seventy-five years hence. The whole of the area of present Greater New York, Newark, Jersey City and Hoboken will by then be built up as solidly as Manhattan and the Bronx are to-day. The population, spreading out from the city in all directions, will have settled in all of Westchester and

Nassau Counties and the wide stretches of Union, Essex and Bergen Counties that lie back of Staten Island and Newark and up along the west bank of the Hudson. This area will be built up to about half the present density of Greater New York.

The following table shows the number of persons in New York City engaged in gainful occupations, classified by the general nature of their work. The figures are based upon the Federal Census of 1920, but are increased in proportion to the gain in the city's population which is estimated to have taken place since then:

OCCUPATION OF NEW YORKERS

<i>Kind of Work</i>	<i>Number of People in</i>	
	<i>Thousands</i>	<i>Percentage of Total</i>
Manufacturing	863	30
Building trades	212	7
Transportation	272	10
Trade: Retail stores, etc.	442	16
Public service	68	2
Professional	190	7
Domestic and personal	347	12
Clerical	455	16

The following table gives a summary of the number of men and women employed in the various main classifications of employment according to an estimate based on the 1920 census:

MEN AND WOMEN WORKERS
(IN THOUSANDS)

<i>Occupations</i>	<i>Men</i>	<i>Women</i>	<i>P. C. Women</i>
Building and construction	212	...	..
Manufacturing	632	231	27
Transportation	246	26	10
Trade	381	61	14
Public service	67	1	2
Professional	113	77	41
Domestic and personal service	170	177	52
Clerical	246	209	46
Total	2,067	782	27

The proportion of women to men in the city's offices, shops and factories, has, of course, changed with a swiftness which our grandfathers could not possibly have foretold. What the future holds for women in the work of the com-

munity is, like other chapters of city prophecy, an interesting—even if not strictly scientific—field for speculation.

City life has subjected man to a new set of conditions to which he has been very imperfectly adapted by past experiences. The concentration of workers in a region adjacent to the factories was particularly necessary in the decades just following the great mechanical inventions. At that time, the working day was excessively long—up to sixteen or eighteen hours—and the methods of transportation which now carry people to and from suburban areas were wanting. Just in proportion as any state has been affected by the Industrial Revolution and has introduced the new machine methods, so it has passed from an agrarian to an urban condition. In the more advanced industrial states, such as England, Belgium and Germany, the city population is in the majority. The same is rapidly becoming true of the industrialized sections of the eastern United States.

Though the modern city sprang up because of the new industrial conditions, there was little in the way of order or planning in the growth of these early manufacturing towns. Crude dwellings appeared near the factories, often built together in long rows and separated only by board partitions. Little provision was made for personal hygiene and sanitation. Sewers and water systems were hardly thought of. Refuse was thrown out of the door and windows or through trap-doors in the floor. Parks and recreation places were practically unknown. Except for the residential sections occupied by employers, the streets were rarely paved. Opportunities for recreation scarcely existed—hardly a primary defect in a period of sixteen-hour days! Naturally, epidemics and pestilences were common in such surroundings. Not only did they threaten the existence of the working population, but the lives of the employers and their families were little safer. Whatever the proportion of humanitarian spirit and self-preservation in their motives, in-

fluent citizens were gradually lined up behind public health programs.

Jeremy Bentham's name is associated with early agitation for public hygiene, as with nearly every other important reform movement of the first third of the nineteenth century. Of his many disciples, Edwin Chadwick and Southwood Smith did most in this particular cause. The disastrous effects of neglecting sanitation were forcibly brought to public attention after 1837, in which year a law was passed providing for the registration of births and deaths, together with statistical evidence as to causes. Under the leadership of Smith and Chadwick, thorough investigations were undertaken. The reports of the committees served to arouse public interest, which was further stimulated by the cholera epidemic of 1847. A Public Health Act was passed in 1848, creating a general Board of Health to advise Parliament and to coordinate the work of local health boards. Chadwick, Smith and Lord Ashley were on the first Board, which was so hampered in its efforts by vested interests, who profited by conditions as they were, that little was accomplished. A series of acts were passed from 1871 to 1875, codifying and extending sanitary legislation, and providing for local enforcement. The separate Ministry of Health, created in 1919, was set up as an adequate central authority and thus cured the most serious defect in the system.

Other European countries had to meet the same situation as the Industrial Revolution reached them. Germany, and perhaps one or two other Germanic countries, have gone even further than England in sanitary legislation. Besides the provisions for pure drinking water and adequate drainage, good paving with sprinkling and flushing of streets have helped to ward off disease. Garbage is kept off the streets or covered. Scientific knowledge of the causes of diseases and the mode of their dissemination is a great achievement of recent times. To give an example, smallpox was formerly a terrible scourge, but now comparatively few people in the

Occident contract it, and a small percentage of these die or are disfigured. Preventive medicine is an illustration of a cure which has extended far beyond remedying the original trouble. Made necessary by the rise of the factory town, it has gone on reducing the death rate, long since lower than it was before the factory system started.

The provision of elementary forms of public health methods, through the efforts of reformers and physicians, was but the beginning of the attempts made to solve the difficult problem of adapting mankind to the novel fact of urban life. It has seemed necessary not only to make life possible within the city, but also to make it relatively pleasant and endurable. This has involved very many significant experiments with respect to both city politics and city life in general. As the population has tended to become more and more concentrated in municipalities, the problems of municipal government have come to vie with those of the state, provincial or central government. In general, the conditions of city life, with their population mixture, have tended to produce a far greater degree of corruption and manipulation in city politics than elsewhere. The political boss, especially, has tended to thrive in city politics. The problems of city government have centered very largely around the activities of the city boss and the efforts of the more intelligent and honest citizens to free themselves from the octopus of the political machine. Various schemes have been suggested for achieving this desirable end, such as the commission form of government, the city manager plan and sundry other administrative novelties. In general, the European municipalities have succeeded far better than those of the United States in solving the perplexing problems of urban politics.

Even more significant, in general, for modern city life than the reform of the abuses of urban politics has been the related effort, in many cities, to secure control over the public utilities of the municipality, and the provision of public facilities for all forms of recreation. Considerable

progress has been made in many great European states toward the municipal ownership of lighting plants, street railways, theaters, lecture halls, music-halls, parks, gardens, etc. Especially has this been true of the German cities. In this way, the people have been put more and more in control of the conditions which determine whether or not their own life shall be healthy, safe, pleasant and inspiring. In America, relatively little progress has been made along the line of municipal socialism, but many writers believe that, in the field of municipal socialism, public ownership and activity are far more likely to be successful than in the more ambitious socialistic plan of general state ownership of all the means of production. Certainly municipal socialism is more in line than the older notions of state socialism with the prevailing view of many political and sociological writers that the local government units must be given a far greater degree of recognition in the politico-social system of the future. Some especially difficult problems have appeared in connection with the vast public enterprises of the city under modern industrialism. A lighting plant, a street railway, a water system or a telephone exchange is likely to be a perfect monopoly, or inefficient to the extent that it is not. In Germany and some other European states, the tendency has been to avoid both the abuses of private monopoly and the difficulties of government regulation through resorting to municipal ownership of such public utilities.

Perhaps the most interesting aspect of the attempt to make modern city life more attractive has been the program of men like Patrick Geddes in Scotland. Taking his doctrines in large part from the point of view of the noted French writer, Frédéric LePlay, Geddes has come to hold that the desirable thing in the way of the improvement of city life is, as far as possible, to get rid of the modern city as a center of congestion. He would attempt to have the city limited to a rather concentrated area containing the factories and business blocks, while the residential section

would be as far as possible distributed into well-planned suburban areas easily accessible through specifically adapted methods of transportation. While his scheme has by no means been generally adopted, there is no doubt that his ideas are gaining headway, and only recently a commission, having the same aspiration, has been created to draw up a plan for the solution, along similar lines, of the problem of the growing congestion of population in New York City. There is little doubt that within the next century some of the leading problems of modern urban life will be solved chiefly by eliminating them, through the distribution of the population in suburban residential sections. Such a plan, while now highly feasible, owes its practicability to the development of transportation facilities in the last quarter of a century, particularly the development of electric motive power.

Rapid cheap transportation is thus very near the center of the group of modern city problems, just as it is the characteristic thing about our industrial order in general. The people who work in a city like Dortmund, Manchester or Detroit must live close by in point of time; but the actual distance may be many miles if there is a swift reliable transportation system. Given twice its present rapid transit facilities, almost any Occidental city could scatter out until the congestion would hardly be noticeable. The trouble is that the same factors which would double the transportation system would probably double the traffic as well. Large cities are usually located on the fine industrial or commercial sites which are improved and made available for more population by every increase in the capacity of the means of transportation. New York City furnishes an example of a situation which is fast approaching absurdity; London is a little better off in some respects and worse off in many others. The elaborate rapid transit systems which connect lower Manhattan with the suburban districts, and the ingenious methods of handling street traffic, have increased

the congestion by bringing to town still more people and vehicles. So far, the water which separates Manhattan from points west and south has placed limits on the utility of motor vehicles; but the new vehicular tunnel will greatly increase the amount of road traffic which can get in and out. It is to be expected, however, that this will add to the traffic which the streets must carry during the day and evening. Perhaps the further specialization of Manhattan Island as a center of business and pleasure will crowd some people out of residence (which would reduce the traffic late at night), but judging by the past, it is much more likely to add new stories to the apartment-houses. There is more opportunity to spread out in London, but even there the crowds of pedestrians which surge on some streets are at times incredible.

Unsolved though many of them are, there is no call for sentimental concern over city problems. The urban population is now generally as healthy and as long-lived as that of the country. It has often been remarked that city people now make more, spend more and save at least as much as their rural cousins, who themselves live far better than the similar class at any previous period in history. There is a certain danger, however, in concentrating half or more of the population of an enormous area in cities. An upheaval like the Great War is likely so to change economic and political arrangements that great cities like Vienna are left without food, clothing or fuel necessary to sustain life. Against this point it might be urged that rural peoples have likewise suffered famine and decimation in all periods of history, including the present, and that the economic mechanism provided by the Industrial Revolution provides both the spirit and the sinews of relief on a scale never approached before. We shall recur later (pp. 220ff.) to a discussion of some of the leading effects of urban life upon the psychic life of many in contemporary society.

II. CHANGES AND SHIFTS IN POPULATION

1. *Population Increases*

In addition to the general shift of population from country to town, there has been a larger movement from one region to another. The economic centers of whole great states have moved from the old settled areas whose life was based chiefly upon agricultural opportunities into the sections which afford industrial and commercial advantages. In general, population has tended to flow to water-power sites or those convenient to such natural resources as coal, iron ore, petroleum and essential raw materials for manufacturing.

Equally striking have been the net gains in population as a result of the Industrial Revolution. The increase was comparatively slow until the middle of the eighteenth century; but from that time until the outbreak of the World War the population of Europe rose in round numbers from 160,000,000 to 450,000,000. Germany was little affected by the Industrial Revolution up to 1871, and had a population of about 41,000,000. By 1910 this had increased to 65,000,000. The United States was relatively an empty country in 1789, with a population of about 4,000,000, which had grown to 105,683,000 in 1920.

A number of interesting explanations have been offered as to the cause of this phenomenal growth in numbers. For one thing, the Industrial Revolution was a direct cause of increased productive capacity, of food as well as of other things. It likewise created the possibility of concentrating in a few Occidental countries a vast amount of food products from outside. Another most significant factor in population growth has been the rise of modern medicine and public hygiene, which has enormously reduced the death rate. For example, the population of Germany has increased remark-

ably during the past fifty years, and yet the rate of increase in the birth rate has steadily fallen.

2. *Malthusianism and Birth Control*

Malthus' generalizations with respect to the tendency of population to press upon the means of subsistence has naturally been checked up, and often criticized, in the light of these facts. It is obvious that in western Europe numbers have increased as more food became available, but not quite so rapidly. This does not necessarily invalidate the so-called Malthusian law, but it does point to other factors at work in the actual situation. In fact, a careful statement of the law would immediately throw many of the criticisms out of court. For example, sudden increases in food supply do not instantaneously lead to equal increases in numbers. Obviously, Malthus' law was intended to apply to a given population within a given area. If the boundaries of the area are changed, as has been the case with Russia, the United States or the British Empire, it must naturally take some time for numbers to reach what might be called the "saturation point." The same is obviously true of new sources of food from outside, such as modern transportation has made possible. Moreover, increasing wants tend to bring into play the voluntary abstention or "moral restraint" which reduces the birth rate. Finally, increasing knowledge of birth control and sterilization has led to restriction of the size of more and more families without "moral restraint" or abstention in the Malthusian sense.

In other words, the main proposition of Malthus seems to hold good—that even the most technically proficient methods of food production have a very limited capacity to increase the output of a given area, and that there must be some kind of checks to population if this new output is not to be quickly absorbed. That we are aware of more of these checks than was Malthus is not surprising. In spite of them,

the growth in human numbers in the world during the past century has been phenomenal. The scramble for habitable areas is evidence that the specter of overpopulation is not yet for ever laid, though the popular emphasis for the moment is upon depopulation and racial decay. Even in the richest industrial nations, like England, the per capita income is so low that were it all evenly divided, all would be in what we should call a low standard of living, as Professor Bowley has shown. Professor E. M. East has called attention to the ominous fact that at the present rate of increase the saturation point for the world will be reached about 2000 A. D. with a population of around 5,000,000,000.

Until conscious and artificial methods of controlling and limiting population increase are widely and successfully adopted, there is no doubt that the population will continue to press upon the means of subsistence, whatever the degree of development of technical efficiency in modern productive enterprise. Particularly does Malthus' view seem valid if one broadens his doctrine somewhat and takes into consideration the higher standards of living which have been brought to the working classes in the last hundred years. It has proved extremely difficult to prevent the population from increasing more rapidly than it has been possible to raise the standard of living for the working classes, so that where the population has not pressed so harshly upon the means of subsistence, it has invariably tended to exert pressure upon the standard of living. One can scarcely doubt that some form of birth control must well become, as one writer has described it "the pivot of civilization." This is the point which the sociologist should most effectively advance to supplement the socialistic notion that the only serious defect in modern industrial and social life lies in the private ownership of property and that if we could have public ownership and the equal distribution of wealth, misery would disappear. The relation of population limitation to social welfare and human progress has been admirably summarized by

Edward Murray East in his important and interesting work, *Mankind at the Crossroads*:¹

Though the biological point of view should not be overlooked in any human problem, in none is it so essential as in the old Malthusian problem of population, the spectre of a century ago, with which people finally attained such a casual familiarity their terror gave way to contempt. The reason is obvious; here one has man's two primary urges working at cross purposes, an unnecessarily high fecundity bringing about a growth of population which makes the individual struggle harder and harder. Nothing could be more dangerous than the false sense of security which has developed on this subject, built upon those shifting sands, the temporary profits of industrial development. Man has seen the evil consequences of local overpopulation fade away like morning mists before the rising sun, and in his growing sense of power he has laughed at the voice of caution. He has pushed out into the thinly settled portions of the earth and has subdued them rapidly—too rapidly for his own good. He has obtained extraordinary agricultural returns for careless, inefficient labour on these fertile virgin soils, thus providing food for the more densely settled regions; and the people of these regions have been lulled to sleep by an entrancing mirage of plenty. As a result the zephyr of population growth has become a whirlwind. Man in his strength has brought down the pillars of Gaza on his own head. . . .

Manifestly, the only relief for the situation is to call a halt on population growth at a point far below the final subsistence limit, at a point in fact where there is no intense struggle for mere existence; and the only means of accomplishing this feat which recommends itself to the ethically inclined is conscious, deliberate control of fecundity. It is no real solution of the difficulty simply to endeavour to raise the food-supply and thereby to increase the number of individuals the earth can support. The vessel is somewhat elastic, it is true, but it is a closed vessel nevertheless. Enhanced efficiency and prudent conservation of resources are means of bringing about increased happiness only if numbers remain constant. . . .

¹ E. M. East, *op. cit.*, pp. 299, 343-51.

Either because they have failed to grasp the complete significance of these genetic principles, or because they have closed their eyes to their logical consequences, the eugenists have seldom gone farther than to make the pathetic suggestion that the whole current of society can be changed by interfering with the two little rills which flow from either side. Society has two duties, they say; those obviously defective should be prevented from having families, those with outstanding merits should make up the deficit no matter what the cost to themselves. The scheme is unobjectionable, theoretically, as far as it goes; but it does not go far enough, and it is not feasible. The really useful eugenics is properly directed birth control, and the only practical directive agent is education. One may say this dogmatically. The reasons why this must be so are few in number and not hard to outline. They are fasces bound up inextricably with the two fundamental instincts and with heredity. . . .

If the human race really desires a continued progress, a fair chance, and a longer and happier life for every individual, the birth rate must come down faster and faster; and it must come down throughout the whole population and not merely within the one section which furnishes those of greatest social worth. To accomplish this, parentage must not be haphazard.

Intelligent persons not wholly swayed by irrational tradition and emotional prejudice will be disposed to accept the idea of rational parentage as wholesome and proper. At the same time one should be under no illusion as to what is likely to be the immediate fate of a social scheme which requires an appreciative forethought by whole peoples, and not merely acceptance by the intelligentsia. No matter how much suffering could be prevented, no matter how much greater a civilization could be built by its application, its general adoption will probably await the compelling force of economic necessity. What else could be expected? Half the people in the world lack sufficient brains to cope with the intricate system of social life the industrial age has brought about. Half the remainder are without the proper training; they lack the power of knowledge. The remaining quarter, who might worthily direct the great majority, sit complacently as long as they are permitted to take an extra toll of the good things of life, and watch the direct control of the destinies of nations remain in the hands of those

whose chief claim to the honour is the ability to emit those hollow words which fill *The Congressional Record* and the Parliamentary debates. Knowledge is not wisdom. Knowledge to prevent the decay of our social fabric is not wanting; but it is a serious question whether there is the required amount of that type of ability which will make a sustained effort to apply it.

3. *The Modern Immigration Problem*

The world-old problem of migrations has become the modern one of emigration. Instead of the older group movements toward "promised lands," we have the steady trickle of population to the places where the economic conditions of the working classes are reputed to be the best.

The major cause of this international migration has been the attraction of the more highly developed economy in those states to which the Industrial Revolution has come. The mechanical industry and the factory system have offered a far greater field for steady and permanent employment, at relatively satisfactory wages, as compared to the situation in the more backward agricultural countries of Europe, particularly of central and eastern Europe. To a very large extent, the supposed advantages, in an economic sense, to immigrants coming from one of these more backward countries, have been vindicated by actual experience, but there is no doubt that many have been induced to leave their native land on the basis of quite erroneous stories with respect to the rapidity with which prosperity might be secured in countries like the United States. A book like Mary Antin's *The Promised Land* admirably illustrates this point. In some cases, most unscrupulous means were used by steamship companies and others to attract immigrants to the United States, in order that profit might be made from passenger fares or from a commission paid by contractors in America, who desired cheap European labor for their enterprises. Some legislation has been passed since 1885 to check

this evil, though it has never been entirely eliminated. The great sources from which the immigrants came into the United States and other American areas during the first half of the nineteenth century were Great Britain, Ireland and Germany. Since the Civil War, however, the greatest volume of emigration has been from the southern, central and eastern European areas. Among these latter regions, the emigration was at first heaviest from Italy, though more recently the majority has come to America from Russia.

Obscured though it is by other more local movements, the emigration from Europe oversea has been the outstanding case of population shifting since the rise of the factory system. The numbers leaving Europe between the sixteenth and early nineteenth centuries were insignificant as compared with the newer phase of the exodus from that continent. For example, 1,285,349 people left Europe for the United States alone in 1907—a number approximately equal to the total population of the English colonies in America in 1725. From 1904 to 1914, no less than 10,000,000 immigrants came into the United States from Europe, or more than twice the population of the United States at the time of the adoption of the Constitution. A German social economist by the name of Supan has estimated that during the nineteenth century over 31,000,000 Europeans emigrated oversea. This estimate is assuredly too low, because since 1820 no less than 35,000,000 Europeans have come to the United States alone.

It has also been frequently urged that we do not get the best European types from the respective countries as a result of contemporary immigration, but rather the less desirable classes from the standpoint of both biological and sociological conditions. This is probably in part but a popular prejudice, the general history of immigration inclining the social historian to believe that invariably it is the more alert types that tend to migrate, leaving behind them the more indolent and docile classes, though there is no doubt

that a considerable number of roving, restless, criminal spirits incidentally find their way into the body of immigrants. Yet it is unquestionably true that the relative number of criminals and representatives of the lowest strata among the European population which migrates to-day is not as great as it was in the period of American settlement from 1600-1776, when the criminal classes and the indentured servants formed one of the largest elements in the stream of immigrants coming to the colonies. One may conclude the whole question by maintaining that, with respect to European immigration into the United States, the question is one which must be settled upon its merits, in the light of actual facts at any given time with respect to the relative need for more non-native labor and the volume of immigration at the particular time. In other words, the matter should be settled on strictly sociological and scientific grounds, rather than upon the basis of race prejudice or doubtful dogmas.

There has been much discussion by sociologists and economists as to the net results of immigration. It would seem that, in general, the countries from which the immigrants have come have profited very little by the slight release of the pressure of the population on the means of subsistence, for the general population losses have been made up by an immediate increase in the birth rate or average of survival. In general, it may safely be stated that it is doubtful if any European country, with the possible exception of Ireland, has decreased notably in population through emigration. Therefore, the rather common humanitarian argument that immigration ought to be tolerated by the country to which immigrants come, on the ground that it improves the living conditions in the countries from which they came, is shown to be fallacious.

As to the results of immigration upon the country to which immigrants come, there can be no doubt that, in the larger aspects of the problem, the process has been on the

whole beneficial. Most of the advanced areas outside of Europe owe their condition to the fact that they have been populated by Europeans. It is almost a platitude to remark that all which separates the United States from a culture of roving Indians is the process of immigration. At the same time, there is no doubt that immigrants may come too rapidly to allow them to be safely and adequately assimilated in the native population, or that immigration may bring altogether too divergent types to make assimilation at all feasible. Particularly is this the case when either negro or Mongolian types are brought into a white population. When we come to the matter of the mixture of various branches of the white race, the problem is chiefly one of cultural assimilation and adjustment. There can be no doubt of the advantages coming from the modern immigration of any white type into an oversea area if the immigrants represent the average level of their native group, and if there is a real need for a more rapid increase of the population than would be possible as a result of the excess of births over deaths.

At the same time, it is very probable that countries like the United States have suffered severely from the coming of too great numbers of divergent types, especially since about 1885. It has been contended by many writers that this over-rapid immigration has tended to reduce both the cultural and the economic level of the American population. This is essentially the thesis of Professor Ross' book on *The Old World in the New*. On the other hand, however, Doctor Hourwich, in his work on *Immigration and Labor*, has taken the point of view that the immigrant laborer has not tended to lower the American standard of living or to be willing to accept lower wages than the similar level of American labor. Certainly we need not take seriously silly and arrogant volumes like Wilbur Cortez Abbott's *The New Barbarians*, which represent our recent immigrants as a cross between the ancient Huns and contemporary criminal imbeciles.

This marked increase of emigration from the Old World has led to the problem of regulating or restricting the resulting immigration to the New. There seems little doubt that any state has both the right and duty to restrict immigration to that level which allows complete assimilation, social, economic and cultural, as well as to exclude immigrants when the population has become adequate to the needs of the country. Restrictive regulations should aim at a selective immigration, which will admit the best types, as measured by physical, mental and cultural tests. Discrimination based upon racial dogmas and in no sense truly selective, such as governs contemporary American regulations, is highly dubious from both scientific and diplomatic standpoints. There is, however, little basis for the sentimental appeal for unlimited immigration on the ground of relieving population pressure in older areas. The remedy in these latter places is not to be found in emigration but in birth control at home.

III. THE TRIUMPH OF THE BOURGEOISIE

Another major social result of the growth of modern industry has been the triumph of the bourgeoisie in their struggle for power against the old agrarian vested interests. That is, the new capitalist, manufacturer and merchant came to hold a position of economic and political ascendancy, to which has gradually been added social supremacy as well. This happened quickly in the United States, which never had any considerable landed gentry except in the slaveholding South, where that class was ruined as a result of the Civil War. At the other extreme, free land long gave an avenue of escape to the worker who found himself over-disciplined or oppressed, so the American labor movement also started late. In England, the presence of a deeply rooted, landed upper class and a working class which was early pressed into a defensive solidarity against the new bourgeois-capitalist group has retarded the latter's advance to ac-

knowledgeable social leadership. The situation has been confused by alliances between the landed and working classes against the common rival, the bourgeoisie. Strangely enough, most of the earlier stages of Britain's advanced labor legislation were the work of the conservatives; and the bourgeois liberals, in order to get the working-class support, without which they could not get control of legislation, have been forced aside into programs of social reform quite at variance with their original, laissez-faire, economic ideas. English economic policies have taken on a new orientation during the twentieth century. The bourgeoisie and the landed aristocracy have gradually become fused through the purchase of estates by successful business men, intermarriage, the entrance of younger sons of country families into business, the ennobling of middle-class families for economic services, etc. Moreover, an aggressive working-class group has escaped the tutelage of both older parties, and at last actually formed a government in 1924. In Germany, the old landed aristocracy held its own with the bourgeoisie and forced the latter into a compromise. Here also, aggressive popular groups took shape. Especially since the War, the wealthier classes have had to make great concessions to the workers to avoid being overwhelmed by a real proletarian movement. In Russia and Hungary, little affected by the Industrial Revolution, the old landlord class remained in the saddle until lower-class revolutions produced the somewhat confused situations in both countries. The landlords in Hungary have now definitely reestablished their power. The winning of the War and the importance of great financial and industrial problems in politics have given the bourgeoisie an apparent supremacy in France and Italy, jealously watched by the peasants who form over half the population and checked by very determined proletarian and landlord groups.

The great technical improvements and advantages which characterize contemporary society we owe chiefly to the bourgeois class, though it must not be forgotten that we are

quite as much indebted to the scientists, engineers and inventors as to the promoters and financiers who have exploited their technical discoveries and improvements. Whether the present alliance between financial strength on the one hand and managerial and engineering brains on the other is temporary or permanent is guesswork. Socialists claim that the latter classes can, should and will be detached from the financial group and attached to society at large, as somehow reorganized. This has actually been achieved, albeit partially by force, in Russia. The Industrial Revolution is still too near us, and the class lines which it overturned are still too chaotic, to form any reliable judgments as to the social order which will result, after the great forces which have been released have had time to shake society down to some sort of equilibrium.

IV. PSYCHOLOGICAL RESULTS OF THE INDUSTRIAL REVOLUTION

The Industrial Revolution has profoundly changed the subject-matter with which the human mind has to deal. Medieval man, in his slow-moving environment, often without a single significant change in activities for generations, might seek for final explanations of things or regard a fixed social order as a matter of course. In the early modern age of printing and oversea exploration, probably more changes took place in a century than in the entire thousand years of the Middle Ages. Town life in western Europe in 1750 showed considerable effects of the Commercial Revolution, but the great bulk of the population still lived in the country, tilled the soil much as it had been done for four thousand years—and was quite illiterate. The town laborers were little better off culturally. About all their information related to the ordinary processes of life, the superstitious traditions of the locality, common gossip, and certain formal religious teachings imparted by the priesthood or ministry.

The laborer of to-day stands in the midst of more technical change every year than took place during the whole medieval period or any century before the Industrial Revolution. He has an elementary school education, as a rule; hence he has at his disposal the modern newspaper, from which he may obtain a vast array of diversified and reasonably reliable information. As far as mere information is concerned, the town laborer of to-day in Western countries is often far better provided for than most scholars, statesmen and diplomats of the thirteenth or fourteenth centuries. That it is mostly useless knowledge, unassimilated, uninterpreted and unutilized in his daily work, does not alter the fact that its conscious possession has transformed the attitude of the members of his class toward society and life.

To the fact that the common man is aware of great changes taking place—or a certain instability of things—is added that of a vastly increased variety of stimuli affecting him personally. We need only compare the life of the peasant, who was still the typical laborer in western Europe in 1750, with that of one of his descendants to-day. The chances are about even that this descendant is an industrial worker in a city. Even if he is not, popular education, periodicals and the new transportation facilities urbanize his life and views. The old stimuli came largely from nature itself. Handicraft methods of manufacturing and the simple social order which went with them did not add greatly to the complication. The noise, swiftness and intricacy of present-day life furnish a sharp contrast. Steam and electricity in a certain sense bring the activities of the whole world to each person's consciousness every day. He reads of a revolution in China, of the international struggle for oil in the Near East and of the new devices for killing him and his fellow-citizens or their enemies in case of war. The moving-picture film tries to explain the Einstein theory to him, and he often spends his evening tuning his radio receiving set to hear

propaganda, music, educational lectures or what-not from places hundreds or thousands of miles away.

The change has been so swift and radical that man as an organism is subjected to new strains, to which his past has very imperfectly adapted him in many cases. An organism which has fitted itself through thousands of years to a relatively simple agrarian environment, monotonously and slowly repeating certain functions and processes from one generation to another, found itself facing a vastly different problem in modern urban life. The increased nervous strain involved in meeting the new situations, noises, dangers, types of recreation, rapid adjustments and readjustments, constitutes the severest test ever placed upon man as a biological and social product. New mental and nervous diseases have appeared, and the volume of such disorders has been increased. Certainly the situation is not so bad as it looks in the statistics, many cases being hereditary, and merely brought to light by the present-day social machinery for finding and segregating the unfit. On the other hand, many people who now have to be cared for in institutions certainly got on very well in a simpler society. A large amount of mental and nervous wreckage has been caused by the lack of adjustment between old customs, ethical standards and institutions on the one hand, and the very different set of facts and problems which have arrived with the industrial era on the other hand. This is the price we are paying for putting the "cave man in the modern city," namely, placing an animal, who attained his present physical status in the cave age, in a modern urban and industrial civilization.

Not the least of the evils which have been charged to the Industrial Revolution, with its regimentation and repetition of processes, has been a certain materialism of outlook, and a standardization of ideas and attitudes. Machines play so large a part in our lives that we want everything to be "efficient" in the mechanical sense. We want to classify and evaluate even ideas in terms of the concrete and practical—

which can not be done, of course, unless they are roughly uniform, and therefore unoriginal. Such a spirit tends to stultify art, literature and music, chiefly because the product must please so large an audience that there is little room for the distinguished and original qualities which appeal only to a cultured few. Our very clothes are standardized as to color and cut. What is more depressing than to look down upon a sea of straw hats in a summer crowd? Underneath the hats are standardized factory-made suits, neckties and shoes. The only way to be distinctive is to spend more money than the others, which gives rise to what Mr. Veblen has so aptly called the "pecuniary standard of taste." This pecuniary measuring-stick is again a part of our deference to wealth, and the classification of people socially according to income. It is so easy, especially with a decimal system of currency, to set down how much a person is "worth" in figures!

Accompanying this cultural and psychic standardization has gone a parallel and closely related tendency to base our social and cultural evaluations upon a specific attitude of deference toward great wealth, as a result of what Professor Veblen has called "the theory of the leisure class." With the growth of great fortunes and the general ascendancy of the very wealthy classes in industry and society there has come an unquestionable tendency to assign high esteem and prestige to the possession of great wealth and the various manifestations in conduct and attitudes which great wealth carries with it. Of all of these attitudes, nothing is more important than the element of "conspicuous waste" as a criterion of the possession of wealth. Nothing is a surer proof of economic independence than the ability to waste huge sums of money on non-social and non-productive enterprises, such as ostentatious dress and equipage, elaborate and wasteful forms of social entertainment, grotesquely pretentious and elaborate dwellings, and, above all, complete abstinence from any sign of manual labor. As these forms of

conduct and attitude are supposed to characterize the most-to-be-envied of all classes in modern society, they have become the approved norms for the production of awe, reverence and deferential abeyance.

Along with this reverence of the characteristic attitudes and practises associated with great wealth has gone the parallel effort of the wealthy to insist upon the servility of the laboring classes, who are characterized by the necessity of manual labor, in the same way that the wealthy are distinguished by their general abstinence from any such effort. It has been fairly possible, in this way, to make the industrial proletariat defer to the standards and characteristics of the wealthy, and, at the same time, to accept as somewhat inevitable their own lowly status. While it is true that there are some signs of a decline of the theories and practises of the leisure class among the more wealthy, and a growing reluctance on the part of the industrial proletariat to accept as inevitable their lowly and servile station, there is no doubt that the situation described above has prevailed very generally during the last century.

In order to illustrate more fully what is meant by the theory of the leisure class and their methods of "honorific consumption" and "conspicuous waste," we shall quote briefly from Professor Veblen's incomparable book on *The Theory of the Leisure Class*:²

So soon as the possession of property becomes the basis of popular esteem, therefore, it becomes also a requisite to that complacency which we call self-respect. In any community where goods are held in severalty it is necessary, to insure his own peace of mind, that an individual should possess as large a portion of goods as others with whom he is accustomed to class himself; and it is extremely gratifying to possess something more than others. But as fast as a person makes new acquisitions and becomes accustomed to the resulting new standard of wealth, the new standard forthwith ceases to afford appreciably greater satisfaction than

² T. Veblen, *op. cit.*, pp. 31-101.

the earlier standard did. The tendency in any case is constantly to make the present pecuniary standard the point of departure for a fresh increase of wealth, and this in turn gives rise to a new standard of sufficiency and a new pecuniary classification of one's self as compared with one's neighbors. So far as concerns the present question, the end sought by accumulation is to rank high in comparison with the rest of the community in point of pecuniary strength. So long as the comparison is distinctly unfavorable to himself, the normal, average individual will live in chronic dissatisfaction with his present lot; and when he has reached what may be called the normal pecuniary standard of the community, or of his class in the community, this chronic dissatisfaction will give place to a restless straining to place a wider and ever-widening pecuniary interval between himself and this average standard. The invidious comparison can never become so favorable to the individual making it that he would not gladly rate himself still higher relatively to his competitors in the struggle for pecuniary reputability. . . .

In order to gain and hold the esteem of men it is not sufficient merely to possess wealth or power. The wealth or power must be put in evidence, for esteem is awarded only on evidence. And not only does the evidence of wealth serve to impress one's importance on others and to keep their sense of his importance alive and alert, but it is of scarcely less use in building up and preserving one's self-complacency. In all but the lowest stages of culture the normally constituted man is comforted and upheld in his self-respect by "decent surroundings" and by exemption from "menial offices." Enforced departure from his habitual standard of decency, either in the paraphernalia of life or in the kind and amount of his everyday activity, is felt to be a slight upon his human dignity, even apart from all conscious consideration of the approval or disapproval of his fellows. . . .

Abstention from labor is not only a honorific or meritorious act, but it presently comes to be a requisite of decency. The insistence on property as the basis of reputability is very naïve and very imperious during the early stages of the accumulation of wealth. Abstention from labor is the conventional evidence of wealth and is therefore the conventional mark of social standing; and this insistence on the meritoriousness of wealth leads to a more strenuous insis-

tence on leisure. *Nota notae est nota rei ipsius*. According to well-established laws of human nature, prescription presently seizes upon this conventional evidence of wealth and fixes it in men's habits of thought as something that is in itself substantially meritorious and ennobling, while productive labor at the same time and by a like process becomes in a double sense intrinsically unworthy. Prescription ends by making labor not only disreputable in the eyes of the community, but morally impossible to the noble, freeborn man, and incompatible with a worthy life. . . .

It has already been remarked that the term "leisure" as here used does not connote indolence or quiescence. What it connotes is non-productive consumption of time. Time is consumed non-productively (1) from a sense of the unworthiness of productive work and (2) as an evidence of pecuniary ability to afford a life of idleness. But the whole of the life of the gentleman of leisure is not spent before the eyes of the spectators who are to be impressed with that spectacle of honorific leisure which in the ideal scheme makes up his life. For some part of the time his life is perforce withdrawn from the public eye; and of this portion which is spent in private the gentleman of leisure should, for the sake of his good name, be able to give a convincing account. He should find some means of putting in evidence the leisure that is not spent in the sight of the spectators. This can be done only indirectly, through the exhibition of some tangible, lasting results of the leisure so spent—in a manner analogous to the familiar exhibition of tangible, lasting products of the labor performed for the gentleman of leisure by handicraftsmen and servants in his employ. . . .

These accomplishments may, in some sense, be classed as branches of learning. Beside and beyond these there is a further range of social facts which shade off from the region of learning into that of physical habit and dexterity. Such are what is known as manners and breeding, polite usage, decorum, and formal and ceremonial observances generally. This class of facts are even more immediately and obtrusively presented to the observation, and they are therefore more widely and more imperatively insisted on as required evidences of a reputable degree of leisure. . . .

The quasi-peaceable gentleman of leisure not only consumes of the staff of life beyond the minimum required for subsistence and physical efficiency, but his consumption also

undergoes a specialisation as regards the quality of the goods consumed. He consumes freely and of the best, in food, drink, narcotics, shelter, services, ornaments, amulets, and idols or divinities. In the process of gradual amelioration which takes place in the articles of his consumption, the motive principle and the proximate aim of innovation is no doubt the higher efficiency of the improved and more elaborate products for personal comfort and well-being. But that does not remain the sole purpose of their consumption. The canon of reputability is at hand and seizes upon such innovations as are, according to its standard, fit to survive. Since the consumption of these more excellent goods is an evidence of wealth, it becomes honorific; and conversely, the failure to consume in due quantity and quality becomes a mark of inferiority and demerit. . . .

Conspicuous consumption of valuable goods is a means of reputability to the gentleman of leisure. As wealth accumulates on his hands, his own unaided effort will not avail to sufficiently put his opulence in evidence by this method. The aid of friends and competitors is therefore brought in by resorting to the giving of valuable presents and expensive feasts and entertainments. Presents and feasts had probably another origin than that of naive ostentation, but they acquired their utility for this purpose very early; and they have retained that character to the present, so that their utility in this respect has now long been the substantial ground on which these usages rest. Costly entertainments, such as the potlatch or the ball, are peculiarly adapted to serve this end. The competitor with whom the entertainer wishes to institute a comparison is, by this method, made to serve as a means to the end. He consumes vicariously for his host at the same time that he is a witness to the consumption of that excess of good things which his host is unable to dispose of single-handed, and he is also made to witness his host's facility in etiquette.

From the foregoing survey of the growth of conspicuous leisure and consumption, it appears that the utility of both alike for the purposes of reputability lies in the element of waste that is common to both. In the one case it is a waste of time and effort; in the other it is a waste of goods. Both are methods of demonstrating the possession of wealth, and the two are conventionally accepted as equivalents. The

choice between them is a question of advertising expediency simply, except so far as it may be effected by other standards of propriety, springing from a different source. On grounds of expediency the preference may be given to the one or the other at different stages of the economic development. The question is, which of the two methods will most effectively reach the persons whose convictions it is desired to affect. Usage has answered this question in different ways under different circumstances. . . .

V. THE INDUSTRIAL REVOLUTION AND ECONOMIC DETERMINISM

The general cultural, social and psychological results of the Industrial Revolution present an admirable opportunity for testing the validity of the economic determination of history, namely, the thesis that other aspects of civilization are determined by the economic processes which prevail at the time. It can scarcely be denied that the facts to date afford a large degree of confirmation of Marx's thesis, though it was unquestionably the development of rationalism and science since 1500 which made possible the technological revolution that established capitalistic enterprise so firmly. It is, of course, possible to accept the Marxian doctrine of social causation as applied to Western society since 1800 without implying in any way the adoption of the socialistic program of social reform.

In regard to society at large our institutions have come to be based in large part upon the new economic order and its processes. Population growth has paralleled modern industrial evolution. The foundations of social classification and the social hierarchy conform rather completely to the economic differentiation of society. Our social interests are primarily bound up with the economic interests, real or supposed of each class. There is little doubt that social values have taken on the pecuniary coloring of the capitalistic order, the bourgeoisie desiring to acquire more and the pro-

letariat attempting to check this and to capture industrial processes for its own use.

Government remains, as it has always been, fundamentally a struggle between economic classes, but this conflict has now become primarily one between the capitalists and the proletariat, with the intermediate group tending as yet to side with capital in most industrial states. In some of the more archaic states, economically considered, like Hungary, the landlords still control politics. In most of the Western states the capitalists have come to dominate. In Russia we have the proletariat in the saddle. In certain countries like England there is still an essential deadlock between the older agrarian interests, capital and the proletariat. Not only domestic politics but also international relations have come into conformity with modern industrialism. The basic motivation of international relations in recent years has been the effort to secure raw materials and markets, and it is not without reason that contemporary diplomacy has been variously denominated as "dollar diplomacy," "oil-burning diplomacy" and "rubber-neck diplomacy."

Law has shaped itself in harmony with the outstanding aspects of modern industrialism. Where the bourgeoisie have come to control, the theory of a natural order based upon unlimited competition has furnished the corner-stone of juristic theory and practise; so much so, in fact, that Justice Holmes once accused his colleagues on the United States Supreme Court of attempting to insert Herbert Spencer's *Social Statics* into the Constitution of the United States. The protection of private property, the perpetuity of contracts, the obstruction of state interference in business affairs and the imposition of special disabilities on the proletariat have been the outstanding features of bourgeois jurisprudence. Where the proletariat have come into control, the situation has been reversed and legislation has been passed expropriating the capitalistic and agrarian owners and proclaiming a régime of cooperation or of communism.

Without passing judgment upon the question of which procedure, if either, is preferable, it may be remarked that in either case legal concepts and procedure have adapted themselves very closely to the dominating economic ideals and interests.

Religion has not escaped from the contamination of the new industrial age. As Veblen pointed out nearly a generation ago in his *Theory of the Leisure Class*, the "pious observances" of the capitalists are little more than a phase of the "pecuniary taste" and "conspicuous waste" of the wealthy. Certain psychologists have since suggested that they may also be a manifestation of psychic compensation for the dubious economic ventures of week-days. The capitalists have in most places been able to insure the use of religion among the middle classes in such ways as to emphasize the sanctity of private property and the perpetuity of the capitalistic system. The Church is still primarily a mechanism for capitalistic propaganda. Several American writers of prominence have openly and frankly created "a Wall Street Christ." The Reverend Doctor C. Everett Wagner has well declared that a very popular trend in modern religion "rings the cash-register," contending further that it is a "movement of sanctified commercialism, peculiarly a product of the twentieth century." He allies himself with "the many clergymen and laymen who are thoroughly disgusted with Big Business declaring dividends on religion." Bishop Charles Fiske of the Episcopal Church protests in the same spirit that "America has become almost hopelessly enamored of a religion that is little more than sanctified commercialism. It is hard in this day to differentiate between religious aspiration and business prosperity." We recognize with due credit and admiration the brave resistance to the commercialization of religion by such organizations as the Federal Council of the Churches of Christ and the late Interchurch World Movement, but the Federal Council is not, unhappily, representative of the dominant trends in contemporary bourgeois religion. On the other hand, in a régime of pro-

letarian domination supernaturalism tends to be discarded and a secularized religion based upon the communistic dogmas comes to supplant it. When the proletarian leaders retain Christianity they represent it as primarily a program of secular economic revolution, a point of view vigorously maintained by Upton Sinclair in his *They Call Me Carpenter* and by Bouck White in his "Church of the Social Revolution."

Ethical questions and solutions have not remained apart from this situation. The capitalistic groups have been fiercely determined to retain the supernatural and conventional theory of ethical judgments and standards, which represent morality as almost wholly a matter related to religion and sex—a moral man being one who is formally affiliated with an ecclesiastical organization and whose sexual conduct in public is externally correct. This theory is highly convenient to the plutocrat, as the reprehensible practises associated with the theory of business enterprise thereby escape condemnation, and he usually has the pecuniary resources to obscure his sexual dereliction unless he is uncommonly stupid and unlucky. A person like Mr. Sinclair of the oil scandals is deemed much more "moral" than the Countess Cathcart. The reformers, on the other hand, incline to minimize the significance of supernatural standards and sexual criteria in ethics, and contend that capitalism, waste and economic oppression are the really serious forms of immorality. Moral standards, they maintain, must be secularized and socialized. They contend that a book like Stuart Chase's *Tragedy of Waste* reveals a much more serious type of immorality than the classics by Ovid, Petronius, Boccaccio, Casanova, Zola or Frank Harris.

The economic classes in society have not failed to recognize the importance of capturing the school system in behalf of their cause. Capitalistic states base their education, as far as possible, on subjects perpetuating the old "humanities" which in no sense bring up the dangerous problems of property and economic justice. As educational progress has more and more necessitated giving attention to the social sciences,

the vested capitalistic interests have endeavored to give the instruction therein such a slant as to emphasize the sanctity of private property and the perfection of the present scheme of things. In the especially precarious field of economics there has been an effort to divert attention from the description and analysis of the contemporary economic order and to concentrate pedagogical activity upon instruction as to how to administer more profitably the present system of business enterprise. The risky nature of pedagogical insistence upon straightforward presentation of the facts regarding the existing state of economic and social affairs has been indicated with an ample display of clinical material in the reports of the American Association of University Professors, in Upton Sinclair's *The Goose Step* and *The Goslings*, and with withering irony in Thorstein Veblen's *The Higher Learning in America*.

Not only do the capitalists insist upon correctness in all instruction pertaining to the existing economic and social system; they are also extremely sensitive in regard to formal moral correctness, as they recognize the invaluable service of conventional moral codes in maintaining capitalistic respectability. Hence, there is little toleration for any effort to offer instruction in scientific ethics or to suggest that the whole problem of ethics must be given a broad social and economic setting. There has been a concerted attack on scientific sociology as especially dangerous in this regard. The slightest deviation from conventionality in doctrine or practice is immediately pounced upon and branded as "free love." A professor of ethics was congratulated because on a questionnaire his students rated fornication as a more serious crime than murder, while eminent sociologists have been fiercely attacked for merely submitting questionnaires to ascertain the views of the younger generation on sexual matters. A popular teacher in one of the larger school systems was recently dismissed for allowing a student in an advanced class to read and construct an English theme about the restrained and generally critical discussion of the newer mor-

ality contained in George Jean Nathan's *The Land of the Pilgrims' Pride*. The bourgeois group rarely stop to reflect that by bringing women into industry and gradually breaking up the home they have done more to disrupt the earlier monogamous family life than all the exponents of "free love" in human history.

When the industrial proletariat capture the educational system they likewise see to it promptly that the schools become a powerful adjunct of socialistic or radical proletarian propaganda and devote themselves to the task of training up young labor unionists, communists or syndicalists.

Art thoroughly reflects the age of contemporary materialism. The new technology has made possible a new type of massive architecture, most notably exemplified by the metropolitan sky-scrapers. These same technological advances have led to the remarkable standardization of architecture and many other phases of art where products can be duplicated and produced on a vast scale and far more cheaply than by the old individualized methods of handicraft manufacture. It is not surprising that the New York *Evening Post* of March 19, 1928, carried as a prominent news item the following announcement: "Artist Aims to Be the Ford of Statuary." The article continued: "A combination of Henry Ford and Benvenuto Cellini was found in New York to-day. He is Simon Moselsio, a Russian sculptor, who follows the Detroitier in the use of quantity production and the Florentine in personally attending to every detail of manufacturing. He works in four materials—porcelain, wood, marble and bronze. Just now he is producing in quantity tiny bronzes, with the result that statuary may soon adorn any smoking stand, mantelpiece or whatnot where Americans keep their objects of art." Nor can one overlook in this regard the growing importance of the movies and the radio as a method of producing a type of highly standardized visual art and music.

Contemporary art has tended to specialize on *motifs* usually associated with some aspect or another of contemporary

industrial society, and not infrequently eulogizes by implication the achievements of the bourgeoisie. Then, the great financiers and industrialists use their pecuniary resources to acquire the great masterpieces and endow metropolitan art museums, standing before the public as the real patrons and connoisseurs of art. How far they actually are in many cases from any real appreciation of the artistic spirit and values may be seen from the naive surprise and indignation once expressed by one of the great American industrialists when the trustees of the Dresden gallery refused to sell him the Sistine Madonna at any price which they chose to set upon this work! When the laboring classes dominate society, art is immediately drafted into the service of the proletariat, as the example of Russia affords illuminating proof. In such cases the themes of art become even more frankly materialistic.

Journalism has long since become a class affair, but the superior pecuniary power of the capitalistic press and their capacity to attract remunerative advertising have enabled them to present a better range of entertainment for their readers and to print papers of a far more impressive physical appearance. Therefore, the proletariat have usually failed to support the papers of their class with adequate loyalty—a serious handicap to proletarian propaganda.

Finally, literature shadows forth the economic stratification of society. The non-fiction work is given over more and more to the description and analysis of questions connected with modern industrialism and to the plans for conserving, mitigating or destroying it. Fiction, likewise, is in part devoted either to the eulogy or the criticism of capitalistic institutions and practises. When not so employed it chiefly provides diverting entertainment for the leisure class or pictures thinly veiled Utopias where the author portrays a better world in which to live.

The most extensive effort to present an economic interpretation of contemporary industrial civilization has been executed by Mr. Upton Sinclair in his various books: *The*

Jungle, King Coal, Jimmie Higgins, The Profits of Religion, The Goose Step, The Goslings, Mammonart, The Brass Check, and Money Writes. While we can not avoid admiring the courage, industry and information possessed by Mr. Sinclair, the work should be done over with less indignation and rather more humor and irony, a task partly executed by Thorstein Veblen, unfortunately in a literary style likely to render his works permanently obscure.

It may be well, however, in this connection to call attention to the view of Mr. G. D. H. Cole, to the effect that in an economy based upon production for service rather than private profit, economic determinism would no longer hold good. In other words, socialism should terminate the validity of one of the chief socialistic dogmas:

In short, if economic classes and class-conflicts are done away with, the Marxian thesis will no longer hold good, and economic power will no longer be the dominant factor in Society. Economic considerations will lose their unreal and distorted magnitude in men's eyes, and will retain their place as one group among other round which the necessary social functions are centered. For the artificial material valuation of social things, which is forced upon us by the actual structure of present-day society, it will become possible to substitute a spiritual valuation. When once we have got the economic sphere of social action reasonably organized on functional lines, we shall be free to forget about it most of the time, and to interest ourselves in other matters. The economic sphere will not, of course, be any less essential than before; but it will need less attention. Always associations and institutions, as well as people, need most attention when they are least "themselves." Our preoccupation with economics occurs only because the economic system is diseased.

VI. WEALTH, SOCIAL CLASSES AND ECONOMIC EQUALITY

It is undeniable that the new system of social classes, based on wealth, is in many ways more tolerable than the old, based on blood. Mere want of proper deference on the

part of the lowly is no longer punishable with the lash or imprisonment. The employer's hold even upon his own people is limited by the freedom of movement to another position and by the existence of labor organizations which take a good deal of the arbitrariness out of the relation of master and man. Still, the aristocracy of wealth has little to complain of as long as the lower classes enthusiastically yield it the sincerest flattery—by copying its ways, clothes and speech.

The rôle played by the idea of equality in our factory-made civilization is very hard to appraise. Once the first phase of the French Revolution had demolished most of the arbitrary legal and political privileges of the upper classes, it became evident that "equality" is a vague word which must not be taken too literally in practise. Napoleon defined it as the freedom of a person to follow any career for which his talents fitted him. Economically, it was practically identified with the laissez-faire ideas of the economists. Even the Declaration of the Rights of Man had expressly stated that it did not mean equality in property, and the execution of Babœuf in 1797 had put an end to any such conception.

The nineteenth century used the word in the restricted Napoleonic sense of "equality of opportunity" within certain limits, largely economic. For instance, there was no serious thought of removing the inequalities of opportunity due to the inheritance of property and family prestige. The first of these two handicaps to the able but penniless, in a society where social position and wealth are largely identified, is much more obvious than the second, but not always easier to cure. For practical purposes, "talents" are an inseparable mixture of heredity and early environment. The incentives furnished by youthful associations and family position tend to bring out native capacity, or even to take its place to some extent. On the other hand, the world is unquestionably full of mute, inglorious Morgans, Rothschilds, Rockefellers and Fords whose early lives have not guided their feet into the path to wealth and fame.

In spite of the rôle played by accident and the unequal

start given people of similar natural endowments, a popular belief in the existence of equality of opportunity was one of the moral pillars of the nineteenth-century economic order. It was freely stated that there were only two or three generations "from shirt-sleeves to shirt-sleeves" in cases where ability was not inherited with wealth. As a matter of fact, the divorcing of ownership from management has about ended that difficulty in founding a family. Economic privilege in the form of safe bonds and incorporated ventures can go on piling up indefinitely without any effort, concern or real ability on the part of the owners. Nevertheless, the considerable number of shifts upward and downward from one economic class to another proves that the inequalities of opportunity are still surmountable, in many cases, and our society gains greatly in stability from a common belief—even though it be an illusion—that station in life corresponds in a general way to merits.

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CHAPTER IX

PROPOSALS FOR SOCIAL AND ECONOMIC RECONSTRUCTION

I. INTRODUCTORY

THE programs and movements for social reform date back in their origins almost to the dawn of written history. Oppression of certain classes existed in the first historic societies, and it is not surprising that some of the earliest literature reflects the growth of discontent among the subject groups. As Professor Seligman has pointed out, the desire to improve the social environment has ever been the dynamic impulse back of the evolution of economic and social doctrines, though it is quite true that theories which have once been the harbingers of progress may later be utilized as a bulwark of the existing order. While proposals for the betterment of social conditions have appeared in all ages, they have been most numerous after great social and economic revolutions which have altered the status of existing classes and have brought an abnormal amount of misery to those whose condition was most seriously affected by the transition. As Professor Robert Flint has expressed it: "It is in their times of sorest depression that nations usually indulge most in dreams of a better future and that their imaginations produce most freely social ideals and utopias."

The growth of wealth, and class differentiation in antiquity, the development of Athens into a commercial empire, the growth of the plutocracy in the Roman Republic, the disintegration of Roman society in the fourth and fifth centuries A. D., the breakdown of feudalism and the origin of the national states, the rise of the bourgeoisie following the Commercial Revolution, that greatest of all social and eco-

nomie revolutions—the Industrial Revolution of the late eighteenth and nineteenth centuries—and the growth of modern imperialism with the expansion of European civilization throughout the world, are well-known examples of social and economic transformations which have produced their attendant misery and maladjustment and accompanying programs of social reform.

Though it might be interesting to deal in some detail with the early social reform movements preceding the Industrial Revolution, the far greater significance of those which have followed it must constitute the reason for devoting the greater portion of this brief survey to a sketch of the more significant social reform movements and programs which have developed since the middle of the nineteenth century.

II. THE HISTORICAL BACKGROUND

The programs of social reform in the first half of the nineteenth century had cleared away the archaic obstructions inherent in Mercantilism and had made vigorous assaults upon the succeeding régime of industrialism and economic liberalism from almost every angle, ranging from an esthetic protest to political and economic rivalry. In England and France some progress had been made toward the beginnings of constructive factory legislation, but elsewhere little had been achieved along this line. Nowhere were working men freely allowed the right of self-protection through organization. In no major European country did political democracy exist in 1850. There were few constructive programs of social reform of a concrete or practical nature. Only in Prussia was there much free public education. But, in spite of these early failures to achieve permanent results, the ground was being prepared for the rise of those reform movements which have brought the beginnings of economic as well as political democracy into the modern world.

Before 1850 the new industrial order had thoroughly

taken hold only in England but had affected France to a considerable degree. The other European countries were little influenced by the Industrial Revolution until the last third of the century. When the new industrialism came to these states it produced a wider following for the programs of reform. Again, the first half of the century was spent by the proletariat and their champions in groping about, feeling their way, in formulating impracticable programs and in discovering successful methods of organization and achievement. After 1850 this preliminary training began to bear fruit in successful proletarian movements in both the political and the economic fields. Further, the mad rush for wealth tended to become less crude and direct and even the capitalistic classes became more resigned to the coming of a moderate restriction of their absolute industrial freedom. Finally, the Spencerian cosmology and the Darwinian biology made any static outlook upon social and economic problems absurd and untenable.

III. THE EFFECT OF THE GERMAN PHILOSOPHY OF THE STATE

The political philosophy of both economic liberalism and utilitarianism had been built up about the thesis of the pre-eminence of the individual, and the state was looked upon as merely the "communal policeman." Aside from the protection of life and property and the erection of public works, the chief function of the state was represented as being the abolition of restrictive legislation previously enacted. The notion of the state as the chief instrument of social reform was wholly repulsive to this school, so a new doctrine of the state was essential before extensive reform legislation could be given a respectable theoretical foundation. This new theory of the state was found in the doctrines of the German idealistic political philosophers, particularly Hegel. Here was discovered a notion of the state which was wholly reverent, which took the community as the starting point

of political reasoning and which believed the individual capable of finding perfection only as a member of the state. This view was brought over into England by T. H. Green, F. H. Bradley and Bernard Bosanquet.

Ernest Barker thus summarizes the nature and significance of this transformation in political philosophy:¹ "Not a modification of the old Benthamite premises, but a new philosophy was needed; and that philosophy was provided by the idealist school, of which Green is the greatest representative. That school drew its inspiration immediately from Kant and Hegel, and ultimately from the old Greek philosophy of the city-state. The vital relation between the life of the individual and the life of the community, which alone gives the individual worth and significance, because it alone gives him the power of full moral development; the dependence of the individual for all his rights and for all his liberty. on his membership of the community; the correlative duty of the community to guarantee to the individual all his rights (in other words all the conditions necessary for his and, therefore, for its own, full moral development)—these were the premises of the new philosophy. That philosophy could satisfy the new needs of social progress, because it refused to worship a supposed individual liberty which was proving destructive of the real liberty of the vast majority, and preferred to emphasize the moral well-being and betterment of the whole community, and to conceive of each of its members as attaining his own well-being and betterment in and through the community. Herein lay, or seemed to lie, a revolution of ideas. Instead of starting from a central individual, to whom the socialist system is supposed to be adjusted, the idealist starts from a central social system, in which the individual must find his appointed orbit of duty."

This philosophy laid the foundation for state-wide activ-

¹ E. Barker, *Political Thought in England from Spencer to the Present Day*, p. 11.

ity, but it carried with it certain exaggerations and dangers which Dewey and Hobhouse have recently revealed.

IV. THE RISE OF SCIENTIFIC SOCIOLOGY

The general science of society, or sociology, took its origin, as Professor Small made clear, from the social conditions and reform programs of the first half of the nineteenth century, which called for some objective science capable of weighing the merits and detecting the defects in the many plans for social reform. Saint-Simon had recognized the need for such a science and it was founded by his disciple, Auguste Comte, and by Herbert Spencer, though there can be no doubt that the science would sooner or later have come into existence had these men never written.

Since their day sociology has attracted many students and many schools of sociologists have developed, each embodying some fertile method of approach to the divers problems with which sociology must concern itself: (1) Comte, Spencer, Giddings, Ward, Hobhouse, Stein and Oppenheimer have developed comprehensive systems of social philosophy; (2) the methodology of the science has been perfected by such men as LePlay, Durkheim, Small, Simmel and the statisticians, such as Quetelet, Jevons, Galton, Pearson, Bowley, Mayo-Smith, Willcox, Chaddock, Hankins, Durand and others; (3) the biological point of approach has been cultivated by the organicists like Lilienfeld, Schaeffle, Worms and Roberty and by their more critical successors such as Jacoby, Vacher de Lapouge, Schallmayer, Carr-Saunders, East and Holmes; (4) psychological sociology has been advanced by Bagehot, Wallas, Trotter, Tönnies, Tarde, Durkheim, Le Bon, Sighele, Ross, Ellwood, Cooley, Sumner, Allport, Bernard, Young and others; (5) the conflict between social groups and interests has been dealt with by Gumplwicz, Ratzenhofer, Oppenheimer, Small and Bentley; (6) the historical mode of approach has attracted Thomas, Hobhouse, Giddings, Westermarck and Durkheim; (7) the

significance of geographical factors has been shown by Ratzel, Reclus, Brunhes, Semple, Fleure, Huntington and others; while (8) close contact with social reform has been made by the scientific students of philanthropy like the Webbs, Devine, Taylor and Henderson, and a sound basis for social legislation has been formulated by Jethro Brown, Pound, Freund and Lindsay.

The attitude of sociologists toward state-activity has varied greatly. Comte believed in a thoroughgoing program of social reform, but evolutionary biology affected sociology much as Newtonian mechanics had affected political and economic thought for two centuries before. Sociologists of individualistic leanings like Ludwig Gumplwicz, Herbert Spencer, Jacques Novicow and William Graham Sumner, interpreted the evolutionary doctrine to mean that social institutions, like the animal organism, evolved in a spontaneous and automatic manner and that human efforts could only be harmful—a view similar to that entertained by the physiocrats toward interference with the “natural order” of physical and social phenomena. Others, particularly Lester F. Ward, Leonard T. Hobhouse and Ludwig Stein, have contended that, while the earliest stages of social evolution are spontaneous, there comes a time when social progress may be artificially controlled and accelerated by the conscious direction of mankind. This dividing line will apparently be reached when statesmen shall have evolved into sociologists. Most sociologists, following Stanley Jevons, have avoided dogmatism on this point and have shown that laissez-faire and state socialism are policies which may each have their virtues in proportion as they are adapted to the needs of a given society, but sociologists are more and more coming to leave the individualist point of view and to stand with Ward and Hobhouse in favoring extensive state-activity. While it can scarcely be said that every sociologist is on that account a talented potential statesman, it is certain that no scientific program of social reform can be formu-

lated independent of sociological investigations or divorced from sociological principles.

V. THE DEVELOPMENT OF MARXIAN OR "SCIENTIFIC" SOCIALISM

The origins of the so-called "scientific" socialism are generally and correctly associated with the work of Karl Marx (1818-83) and Friedrich Engels (1820-95). As Bertrand Russell has well said, "Socialism as a power in Europe may be said to begin with Marx. It is true that before his time there were Socialist theories, both in England and in France. It is also true that in France, during the Revolution of 1848, socialism for a brief period acquired considerable influence in the State. But the socialists who preceded Marx tended to indulge in Utopian dreams and failed to found any strong or stable political party. To Marx, in collaboration with Engels, are due both the formulation of a coherent body of socialist doctrine, sufficiently true or plausible to dominate the minds of vast numbers of men and the formation of the International Socialist movement, which has continued to grow in all European countries throughout the last fifty years." It would probably be futile to attempt to indicate all the sources of Marx's views, for he read deeply in the literature of his age and was in contact with most of the tendencies of his period, but a few of his more conspicuous obligations may be set down: (1) to Hegel he was indebted for his dialectical system and his faith in state-activity; (2) his materialistic philosophy of history he took from Feuerbach; (3) the labor theory of value was derived from Ricardo, Rodbertus and the Ricardian socialists; (4) the doctrine of surplus value was found by Marx in the writings of Thompson; (5) the notion of class conflict and of the necessity of a proletarian upheaval was emphasized in the works of Louis Blanc, Proudhon and Weitling; (6) from Sismondi he received his conviction that the capitalists would

be weakened by the progressive concentration of wealth in the hands of a few men of great possessions; and (7) from Rodbertus he may have derived the thesis that continually recurring crises were a phase of economic life under capitalism.

The Communist Manifesto, a document drawn up by Marx and Engels for the German Communist League in Paris in January, 1848, contained the essence of Marxian socialism. This begins with the economic interpretation of history, namely, the contention that the successive systems of the production and distribution of wealth have determined the accompanying social and cultural institutions. Then comes the labor theory of value, the belief that labor produces all value. From this is derived the doctrine of surplus value by pointing to the difference between the total social income and that received by labor. This difference is the surplus value created by labor and out of which it is cheated by the capitalist in the form of rent, interest and profits. Hence there arises the notion of an inevitable and irreconcilable struggle between the proletariat and the capitalists. This can but terminate in the final overthrow of the latter, for they are being continually weakened by the steady concentration of wealth in the hands of their more powerful representatives and by disastrous repeated crises, while the proletariat will become progressively stronger through economic solidarity, party organization and the obtaining of the suffrage. When the proletariat shall have secured a majority in the law-making bodies of the several states they will rise up and expropriate their oppressors and institute the régime of social and economic democracy which Marx predicted but wisely refrained from describing in detail. These doctrines were elaborated with greater thoroughness and in more ponderous and obscure language in the work on *Capital* begun by Marx and completed by Engels.

The enduring theoretical contributions of Marx are his economic interpretation of history and his extremely effec-

tive criticism of the individualistic industrialism of the first half of the nineteenth century, the latter of which "cannot but stir into fury any passionate working-class reader, and into unbearable shame any possessor of capital in whom generosity and justice are not wholly extinct." Few if any of Marx's other major reform doctrines are now regarded as possessing substantial validity, but as a contributor to the science of economics he is generally regarded as the father of "institutional economics" as since cultivated by Sombart, Weber, Hobson, Webb, Hammond, Veblen, Hamilton and others.

Marx was also instrumental in establishing socialism as a political force in Europe. The International Workingmen's Association took its origins from a conference of laborers at the London International Exhibition of 1862. It was organized at London two years later and its principles were drawn up by Marx and adopted at the Geneva conference of 1866. A German wing was started by Wilhelm Liebknecht in 1864 and, under his leadership and that of August Bebel, it was developed into the Democratic Workingmen's Association at Eisenach in 1869. In the meantime a German General Workingmen's Association had been organized and its program enunciated by Ferdinand Lassalle in 1863. These two groups coalesced at Gotha in 1875 and created the German Social Democratic party. Persecuted by Bismarck from 1878 to 1890 it grew in numbers and power until the party commanded 110 out of 397 votes in the Reichstag of the old German empire and has now captured the balance of power of the German Government in a seemingly permanent manner.

The beginnings of the modern French political organization of labor dates back to 1878. Two years later French Marxianism was originated under the leadership of Jules Guesde. But the French socialists for a long time were unable to arrive at the same unity that characterized the party in Germany. Numerous sects developed and there grew up

much bitter feeling, particularly between the Marxians, led by Guesde, and the revisionists or opportunists led by Jean Jaurès, perhaps the ablest figure in the history of contemporary socialism. An effort to unite these factions failed in 1899, but met with more success in 1905, and the United Socialist party was able to elect 102 out of 602 members of the Chamber of Deputies in 1914, besides 18 members of the allied Independent Socialist party.

The Socialist party organization made rapid progress in a number of the other chief European countries, notably Austria, Italy and Russia, and reached remarkable strength in some of the lesser states, particularly Finland, Sweden, Denmark and Belgium. In part, this has been the result of the increased strength of the proletariat and, in part, the effect of a moderation of socialistic proposals which has attracted many liberals who refuse to accept all the Marxian postulates. Whatever the validity of the socialist plans for economic revolution, there can be little doubt of the telling nature of the socialistic critique of capitalism or of the soundness of the aspiration to ground production on the motive of social service rather than private profit.

VI. THE ENGLISH FABIANS AND THE GROWTH OF "REVISIONIST" SOCIALISM

In spite of the significance of Marxian socialism in attracting a sufficient following to make it a political and economic movement of the greatest importance, it possessed certain obvious theoretical difficulties which embarrassed its more thoughtful supporters and gave its enemies a vulnerable point of attack. These weaknesses were chiefly the untenable labor theory of value and the deductions from it, and the refusal of the Marxians to cooperate with existing capitalistic governments in securing remedial legislation for the proletariat. A program of reform which was not to begin until after a remote and complete economic and social rev-

olution had been achieved was much less attractive than one which would accept partial amelioration on the road to complete triumph.

This situation was first adequately comprehended by a group of English radicals known as the Fabian Society. They organized out of a general sympathy with socialistic propositions which had been brought before them, in part, by English followers of Marx, like William Morris and H. M. Hyndman, and, in part, by two American radicals, Henry George and Thomas Davidson. The most important members of this group have been Sidney Webb, Graham Wallas, Bernard Shaw, Chiozza Money, Edward Pease, H. G. Wells and Steward Headam. They derived their name from the Roman leader, Fabius, and their resolution to delay their final convictions until the socialistic movement had further developed. They relied chiefly upon the hope of arousing an intellectual movement in favor of radical social reform, and their great significance lies in the fact that they repudiated the fatalism of Marx and came out for "opportunism," or remedial social legislation through the agency of the existing political organization. They thus made socialism an evolutionary rather than a revolutionary movement. They were also less enamored with the internationalism of Marx and laid greater stress upon national progress in social reform.

While the Fabians originated the tenets of "Revisionism" the spread of this movement was due more to the agitation of a German socialist savant, Eduard Bernstein (1850—). Bernstein lived in England during the period of the socialist persecution in Germany and was converted to the ideas of the Fabians. Returning to Germany in the early 'nineties he began the dissemination of his new convictions and in his work on *Evolutionary Socialism* he systematized his principles, which were chiefly a denial of the Marxian economics, especially the labor theory of value, a declaration for "opportunism" or piece-meal remedial social legislation, a willingness to cooperate with existing governments and to

concede more to the principles of nationalism and patriotism than the Marxians would allow. In other words, he aimed at the practical transformation of socialism from a proletarian party of revolution into a party of radical social reform which could attract the support of non-Marxian liberals. While he was not able to capture the German Socialist party until after the death of Bebel and the elder Liebknecht, the Marxians now constitute a definite minority among German socialists and many of the revisionists have even passed Bernstein in the degree to which they have moderated the Marxian doctrine and program.

The general history of contemporary socialism in every important modern state has been much like that of German socialism: Marxianism has served as the entering wedge of propaganda, and the growth of the movement has led to the domination of revisionism. Only in Russia, where socialism did not have long enough a period of development to allow the triumph of "opportunism," have the Marxians remained in the majority. The leading revisionist socialists have been Jaurès in France, Émile Vandervelde in Belgium, Filippo Turati in Italy and Peter Struve and M. Tugan-Baranowsky in Russia. By the outbreak of the World War most of the intellectual leaders of socialism in the United States had also generally capitulated to revisionism, though the majority of the party clings to Marxian principles. Thus, as socialism has increased in strength it has developed moderation. This has been due, in part, to the greater validity and practicability of revisionism and, in part, to the very growth of socialist power for, as Orth has well put it, "ambition brings power, power brings responsibility, responsibility sobers the senses." Socialism has in this manner been purged of the nightmare of revolution, except in Russia, and, while it is undoubtedly increasing in strength almost everywhere, it can no longer frighten any person except the one who opposes the very principles of progress and justice.

VII. THE RISE AND EXPANSION OF STATE SOCIALISM

Closely related to the principles and program of revisionist socialism and in part contributing to the growth and vitality of the former in the so-called "State Socialism." The chief difference between them is that state socialism has primarily come from radical bourgeoisie instead of moderate socialists, though it must be remembered that in some cases, most notably in that of Bismarckian social legislation, state socialism has been used to aid autocracy and check radicalism. The same general program of remedial legislation is proposed by both, though their ultimate goal is slightly different. The revisionist hopes for an ultimate proletarian state, but plans to ease as much as possible the passage of the capitalist over the Jordan of social democracy, while the state socialist hopes to retain the capitalistic system with great concessions to the laboring classes. State socialism received some considerable impulse from Lassalle, but its chief early leaders were the German, Karl Johann Rodbertus (1807-75), and the Frenchman, Charles Brook Dupont-White (1807-78). More recently the program of state socialism has received the support not only of statesmen in the German Progressive party, the French Radical Socialist party and the English Liberal party, but also, in different degrees of the professorial champions of social reform within the capitalistic state, the so-called "Socialists of the Chair," such as Schaeffle, Wagner and Schmoller in Germany; Bouglé and Gide in France; Webb, Hobson and Hobhouse in England; and Fetter, Fisher, Patten, Seligman and Seager in the United States.

State socialism in actual legislative achievement has made the greatest progress in Germany where there has been enacted an elaborate program of social legislation covering almost every phase of protection to the laboring classes. It has also included the adoption of the state ownership of railroads and other public utilities and a vast amount of municipi-

pal socialism. Sickness insurance was initiated by an act of May 31, 1883; accident insurance by an act of July 6, 1884; an old age and invalidity insurance by the law of June 22, 1889. Factory legislation passed following 1875 was systematically codified in 1891. State ownership of railroads progressed to such a degree that but an infinitesimal fraction remained in private hands. In addition, as Mr. Howe has pointed out in his *Socialized Germany*, there has developed an enormous amount of generally beneficial municipal socialism. The return to a high protective tariff was insured by the initial act of 1879.

France has made extensive progress in this direction in the latter half of the period of the Third Republic. Workmen's compensation was secured in 1898, old age and invalidity insurance was provided in part in 1905, and old age pensions in 1910. A new code of factory legislation was prepared in 1910. At the outbreak of the World War nearly one-fifth of the railroad mileage was owned by the state, and the tariff revival followed the act of 1881. Since 1900 much remedial legislation has also been passed in Italy. The Fascist régime in Italy since the war represents a high development of state socialistic enterprise under autocratic auspices. Austria has followed much of the example of Germany in this movement.

In England, the home of economic liberalism, even the party of Cobden has been converted to state socialism through a process of change which Professor Hobhouse has clearly explained in his little book, *Liberalism*. Its vigorous leader, David Lloyd George, secured, in the period between 1905 and 1914, the adoption of a legislative reform program designed to make Cobden turn in his grave and rivaled in content only by German achievements. Workmen's compensation was secured by an act of 1906. Old age pensions were introduced in 1908-09. Sickness and invalidity insurance was initiated in 1911. Thoroughgoing reform of the inequitable land-holding system was forecast in the Small Holdings Act

of 1907, but was cut short by the outbreak of the World War.

In the United States state socialism made scant progress until the "accident at Buffalo" put Mr. Roosevelt in the presidential chair. Down to that time the plutocratic admirers of the philosophy of Cobden and Bright, such as Roscoe Conkling and Mark Hanna, had maintained individualism in a position of dominance. While Mr. Roosevelt achieved relatively little in the way of positive remedial legislation, he aroused the spirit of the people in this direction and made possible the very considerable progress in advanced economic and social legislation which took place in Mr. Wilson's administration. Of all the enemies of the political postulates of economic liberalism state socialism has to date been the most deadly in practical results. It is really the "philosophical theory of the state" in action.

VIII. RECENT DEVELOPMENTS IN CHRISTIAN SOCIALISM

The growth of social problems and the development of programs of relief have not been without their reaction upon ecclesiastical organizations and policies since 1850. In general, the chief contrast between the newer and older Christian socialism is to be seen in the greater insistence to-day upon environmental changes rather than upon the mystical spiritual regeneration of the individual. In other words, this means a transition from theological to sociological premises. The Catholic party has been especially active in this matter. In Germany, Adolph Kolping (1813-65) proposed associations of young working men for religious as well as economic betterment; Bishop von Ketteler (1811-77), F. C. J. Moufang, (1817-90) and Franze Hitze (1851—) advocated not only social legislation, but also the organization of gild-socialism under Catholic auspices, aided by state financial support, as the best agency for solving modern industrial evils. The program was designed, in part, to weaken the state, the secular rival of the church, and, in part, to

attract the proletariat to the ecclesiastical authorities. The Catholic party in Germany has been strongest in Bavaria, from which the Center party, always an exponent of social reform, has been chiefly recruited. In Austria, Karl Lueger (1844-1910) adopted the program of the German Catholic gild-socialists and organized the powerful Austrian Christian Socialist party.

In France, Frédéric LePlay (1806-82) proposed to solve modern social and economic problems by developing the "family group"—an organization midway between the old patriarchal family and the modern family organization. But much more important than this for social reform was his method of studying social problems, for he is rightly regarded as the real originator of the social survey method of social investigation. Much more influential has been the work of Albert de Mun (1841-1914), who accepted the gild-socialist program and organized the *Action Libérale Française*, virtually the Catholic Socialist party of France. Hilaire Belloc and Cecil and Gilbert Chesterton have tried without any notable success to organize a similar movement in England. Even the liberal Pope, Leo XIII, in his encyclical, *Rerum novarum*, sent out in 1891, advocated remedial social legislation for the laboring classes, espoused the program of gild-socialism and maintained the special solicitude of the Catholic Church for the lowly laborer, whether urban or agrarian. In the United States the work of socially minded Catholics like John A. Ryan has been notable alike for courage and modernity.

The social impulse has also affected Protestantism in recent times. In Germany, the fanatical Hohenzollern court preacher, Stöcker, organized what was called a Christian Social Workingmen's party, but was in reality more Anti-Semitic than either Christian or socialist. Friedrich Naumann in the 'nineties also made an unsuccessful attempt to capture German Protestantism for a radical social reform policy. In France, the Protestants have been noted for their

philanthropic organizations, but they have never been strong enough to create a powerful party of social reform. In England, the work of Maurice and Kingsley has been carried on by aggressive Anglicans, like Bishops Westcott and Gore, who founded the Christian Socialist Union in 1889, and like John Neville Figgis, who formulated an elaborate theoretical justification of what might be called ecclesiastical syndicalism. In America Christian socialism was founded in the late 'eighties by Josiah Strong, Richard T. Ely and George D. Herron, and received its most effective support from Walter Rauschenbusch in his famous works, *Christianity and the Social Crisis* and *Christianizing the Social Order*. Other adherents to this point of view have been Francis Peabody of Harvard, C. R. Henderson and Shailer Mathews of Chicago, C. A. Ellwood of Missouri, Harry Ward of Union Theological Seminary, E. L. Earp of Drew Theological Seminary, A. P. Fitch formerly of Amherst, P. A. Parsons of the Portland School of Social Work, S. Ralph Harlow, of Smith College, and David D. Vaughan of Boston University. The most active Christian socialist in America to-day is the free lance, Sherwood Eddy, ably seconded by Kirby Page. The social point of view has attracted religious radicals as well as conservatives. Indeed, it is probable that the critical adherents to Christian doctrines are the most inclined to stress the social phases of Christianity, for with them the social and ethical elements are about all that remain to be saved and expanded. With the decline of the eschatological objective and the disappearance of the belief in a literal heaven and hell, the sincere Modernist Christian can find little logical interest in saving people from a hell which does not exist. He must, rather, save them from the actual hell which is to be found in unsanitary and oppressive social and economic conditions.

IX. THE NEWER ANARCHISM AND THE ATTACKS UPON THE BOURGEOIS NATIONAL STATE

Modern anarchism is a revolt against the oppressiveness of either the agrarian or the capitalistic state. It is most significant that the two leading figures in the development of the modern anarchist movement have been Russians. At a time when modern industrialism was creating new problems and bringing the necessity of modern democracy nearer to hand, the Russian autocracy tried to maintain a government almost as medieval and intolerant as at the time of Peter the Great.

Of the two great leaders of modern anarchism, Michael Bakunin (1814-76) was the revolutionary propagandist. He paid little attention to the problem of the details of the future anarchist state, but regarded his chief task to be the spreading of the propaganda of hatred for the state and private property, and the organization of a movement committed to their destruction. To him the state appeared as the great and central engine of human oppression and its elimination seemed the one chief need of the time. Once the state was removed the task of the reconstruction of society on anarchistic principles could safely be left to the future generations. Hence, the work of Bakunin was chiefly the dissemination of the gospel of destruction, his views being most systematically expressed in his *God and the State*, where he maintained loyalty to state and religion to be the chief obstacles to social progress and human liberty.

Prince Peter Kropotkin (1842-1921) is the chief systematic and constructive writer on modern anarchism. According to him the ideal organization of society is the non-coercive community without private property, and functioning perfectly through the operation of the principle of mutual aid or cooperation. To support his position he has not only made a theoretical defense of his system, but has also executed a thorough historical study of the importance of the

principle of mutual aid from the first animal societies to the present day. He has brought forward a wealth of evidence to prove cooperation the chief factor in social evolution. The domination of cooperation was terminated by the rise of the modern dynastic and capitalistic state, which has created most subsequent evils without in any way contributing to their effective removal. The communistic, cooperative and non-political community then, is the goal of the philosophical anarchist. Human nature having been perverted by private property and coercive political institutions, their removal will restore the pristine virtues of the race. The anarchistic views have also received the support of such writers as the Russian, Léon Metchnikoff, and the Frenchmen, Élisée Reclus and Jean Grave.

The economic program of the anarchists is not greatly different from that of the socialists, as far as the institution of private property is concerned, but their political ideals are diametrically opposed. The socialist proposes a vast increase in state-activity, while the anarchist desires the complete extinction of political authority and the substitution of voluntary cooperation. The anarchists have erred in generalizing too much from Russian conditions, which have been incomparably worse than in the more democratic states of western Europe. Further, their movement is unadapted to modern conditions. They are either antiquated or greatly ahead of their time. Voluntary cooperation may have been possible in a small primitive group or it may be practicable in the far distant future when human behavior and its social setting shall have been more highly perfected, but scarcely at the present time, when imperfect humanity faces a complexity of problems of unprecedented volume and when the state is more than ever necessary. The anarchists have done good in showing how much oppression has resulted from autocratic states, and in stressing the unexploited potentialities of cooperation, but the remedy would seem to lie in the improvement of the state through efficiency and

decentralization rather than in the total extinction of political authority. The cooperative movement of a more moderate character than anarchism has gained wide support and has achieved remarkable results, especially in some of the smaller agrarian states of Europe. It was powerfully aided by early Utopian and Christian socialism.

X. THE DEVELOPMENT OF LABOR-UNIONISM

It was one of the cardinal points of economic liberalism that perfect freedom of contract should prevail in the economic relations of employer and employee, but in actual practise the freedom was chiefly that of the employer to reject the services of the employee. Where one party to the contract could refrain from participation with equanimity while the other party would be threatened with starvation, there could be neither freedom nor equality of contract; unorganized labor was thus wholly at the mercy of the capitalistic employer. On the other hand, if the laborers could combine and withhold the services not merely of one man, but of a large number, the solicitude of the employer over the failure to continue the labor contract could be greatly increased, while the suffering of the employees could be lessened through cooperation in bearing the mutual loss. The desire to meet the employer on relatively equal terms and thereby to realize security in employment has been the central impulse in the development of modern labor-unionism.

Labor unions have been often criticized for the undoubted lack of interest on the part of labor in efficient productivity, but this seems to be the result of easily understood circumstances. In the first place, the modern methods of manufacture have eliminated most of the foundations of human interest in work, and the pay-envelope is about all that can concretely appeal to the laborer. Then the laborer has learned all too well the pecuniary philosophy of his em-

ployer. Inferior goods, dishonestly advertised and sold for high prices, are easily translated by the laborer into short hours and indifferent and slothful work for high wages.

The question has often been raised as to the historic relation between the modern labor unions and the older gild organizations. It has been shown pretty conclusively that there was no genetic connection between them; in England there was a long hiatus between the end of the gilds and the origin of unions, and even on the Continent there is little evidence that labor unions grew up out of previous gild organizations.

In England, labor-unionism was early prohibited by the Combination Laws of 1799 and 1800. In 1824 Francis Place and Joseph Hume smuggled an act through Parliament legalizing organization, but this was repealed in the following year. Owen's attempt to stimulate unionism in the 'thirties failed. In the 'sixties the cause of unionism was taken up by the so-called "Junta," made up of Allen, Applegarth, Coulson, Guile and Odger. By acts of 1871 and 1875 organization and strikes were legalized. Though the reactionaries in the Taff Vale and the Osborne cases (1901 and 1909) tried to weaken the unions, the Liberal party, in legislation following 1905, has practically abrogated the effects of these decisions. To-day labor organization is probably the most effective aid to the English urban proletariat. At the outbreak of the World War these unions had about three million members.

In France, an act of 1864 gave the laborers the right to organize and a later law of 1884 authorized them to strike. Since that time there has been a great increase in the number of unionists, accompanied by a bitter struggle between those who cling to orthodox methods of attempting to secure better conditions within the capitalistic system and those who incline toward the greater radicalism of the syndicalist movement. The French labor unions now boast of over one million members. In Germany labor-unionism was originally

little impeded by restrictive legislation, but it came under the ban during the anti-socialist campaign from 1878 to 1890. Since then it has been little restricted. Most of the German unionists are organized in Social Democratic or "Free" unions, embracing about two million members. In no other important country have the unionists so faithfully maintained the ideals of excellent craftsmanship which were so characteristic of the medieval guilds. Labor-unionism has spread to most other European countries, though in many, especially in the Romance nations, it has tended toward syndicalism.

In the United States extensive labor organization began, following the Civil War, with the Knights of Labor, an organization which declined after the violent strikes of 1886. Its place was taken by the American Federation of Labor, an organization which at the present time claims some three million members, but some of the most powerful and up-to-date of the unions are outside the Federation, which was, in the past, restrained by the conservatism of Samuel Gompers. Generally speaking, whereas in the earlier types of labor unions the organization was mainly based on trades, the trend is now toward the organization of skilled and unskilled laborers by nation-wide industries, the trade union being replaced by the industrial union.

The policies of labor unions have centered about two main avenues of attack upon the capitalists. Matters of immediate interest, such as wage agreements with employers, are arranged either by peaceful collective bargaining or by more violent action such as strikes and boycotts. For the more general advancement of the status of the proletariat they rely upon the possibility of obtaining legislation favorable to the interests of the laboring classes. Which of these two policies is most stressed varies with different unions and in different countries, but, on the whole, it is probable that the strike policy has predominated. This has been particularly true in the United States where the United States

Supreme Court very frequently declares legislation beneficial to labor unconstitutional.

The degree to which the labor unions have attempted to gain political power has differed widely with time and nation. In Germany, most unionists are members of the Social Democratic party; in France, orthodox unionists tend to affiliate with the socialists, while the radicals who incline toward syndicalism eschew all political activity; in England, the unionists have a more or less distinct Labor Party of considerable proportions; in the United States, Samuel Gompers attempted to keep the American Federation of Labor out of specific partisan political activity, though he several times declared his own preferences for candidates at presidential elections. An accessory but very important feature of trade-unionism has been the development of fraternal and cooperative activities among members. No single fact needs to be more emphasized in even a cursory survey of labor unions than that there is the utmost diversity in modern labor organizations as to spirit, purpose, policy, organization and tactics.

While the growth of organized labor has been one of the outstanding features of the social and economic history of the nineteenth century it is handicapped by many imperfections. The attempt to prevent violence through making arbitration of labor disputes compulsory has met with only temporary and local success, most notably in Australia, though the tendencies seem to be moving in this general direction. Again, many powerful employers and associations of employers have even yet so little adjusted their economic orientation to the modern industrial world that they refuse to recognize the validity of either the principles or the practices of labor organizations. As a result, the relations between capital and labor are too frequently of the nature of slightly mitigated industrial warfare.

There can be little doubt that our modern labor organizations have done more than anything else to advance the

material interests of the laboring classes in the last half-century and have been the most potent factor in promoting industrial democracy. Yet labor-unionism is bound to be unsatisfactory to those who do not believe in merely alleviating the misery of the proletariat, but hope to overthrow the whole modern capitalistic order. Orthodox labor-unionism aims chiefly to improve the lot of the laborer within a capitalistic industrial society, and accepts the implied persistence of this order. Therefore, those who wish the institutions of a society controlled by the proletariat and desire to achieve this revolution by economic means rather than by the political methods of socialism have tended to leave labor-unionism and go over to the more radical labor movement which has found its greatest strength in syndicalism.

XI. THE DEVELOPMENT OF SYNDICALISM AND THE RADICAL LABOR MOVEMENT

Syndicalism, which originated as a French labor movement and has since spread to other countries, particularly Italy and America, is the most recent radical proletarian movement of any significant proportions. Syndicalism resembles socialism in desiring to end the present capitalistic economic order; it bears some similarity to labor-unionism in believing that the economic point of attack is likely to be most effective and in using labor organization as the chief instrument for gathering and disciplining the forces of the proletariat; and it is like anarchism in desiring the abolition of political forms of control over mankind. It differs from socialism in rejecting the efficacy of political activity and in refusing to accept state socialism, even in a proletarian state. It diverges from conservative labor-unionism in favoring, as the unit of organization, the industrial rather than the craft union and in aiming to get rid of the capitalistic employer altogether. While bearing a closer relation to anarchism than to socialism, it does not propose so thor-

ough an abolition of all existing institutions as the anarchist desires, and it seems likely to retain a far greater amount of authoritative social control over the members of the syndicalist society, even though it may try to evade this in theory by refusing to designate such control as governmental or political.

The historical origins of French syndicalism are not difficult to understand. A vigorous theory of the necessity of a class war had come down from Proudhon. The many factions into which French socialists had split and the bitter animosity which developed between them weakened the cause of the proletariat, and the socialist cause was further discredited in the minds of the radical laboring element because former socialists, like Millerand and Briand, had been willing, when they entered the French Government, to use the forces of the capitalistic state against radical labor revolts. Therefore, there arose a determination among a large number of French labor leaders to turn their backs upon all political activity, and to distrust political methods of relief, whether from state socialism or Marxian revolutionary hopes. At the close of the 'eighties labor exchanges were organized, first in Paris, and later throughout the leading French cities, to act as a general clearing-house for local labor and employment problems and policies. In 1892 there was established a national organization—the Federation of Labor Exchanges (*Fédération des Bourses du Travail*). This movement was guided by Fernand Pelloutier (1867-1901), a French disciple of communist anarchism. At about the same time another radical labor organization was developing in France. This was the General Confederation of Labor (*Confédération Générale du Travail*), founded in 1895 by uniting some seven hundred French local industrial unions or *Syndicats*, from which the syndicalist movement gets its name. In 1902 the Federation of Labor Exchanges and the General Confederation of Labor united and became the basis of the organized syndicalist movement. The

systematic theorist of French syndicalism, curiously enough, is the aristocratic philosopher, Georges Sorel (1847—).

The syndicalists eschew any attempt to come to favorable terms with their capitalistic employers in any settlement which may be regarded as permanent. They aim frankly and openly at conducting a class war by industrial methods which will sooner or later drive the capitalist from industry and overthrow his political bulwark—the modern national state. The unit of organization at which the syndicalists aim is the industrial union, the general organization of all laborers in a given industry, which, it is hoped, will give greater strength and less division of interests than craft-unionism, limited, as the latter is, chiefly to the minority of skilled laborers. Their method of carrying on the class war is the so-called “direct action,” the two chief types of which are “sabotage” and the “general strike.” The former is more of a temporary instrument designed to serve until the general strike finally drives the capitalist from the field. It consists in any mode of harassing the employer, from serious injury to machinery, to slow and inferior workmanship in production. While some employers might be discouraged and abandon the fight merely as the result of sabotage, a more vigorous method will be needed to deal with the more obdurate capitalists and with the state, and for this purpose the syndicalists propose to resort to the general strike, which is not merely a suspension of labor to improve local conditions, but a general “cessation of work, which would place the country in the rigor of death, whose terrible and incalculable consequences would force the government to capitulate at once.” If the syndicalists should be successful in destroying the capitalistic order they would institute a communistic economic society and a governmental organization based upon the industrial system. As Orth expresses it, “syndicalists believe in a local or communal government. Their state is a glorified trade union whose activities are confined to economic functions, their nation is a collection of federated

communal trade societies." They would, then, take government out the front door of the state to bring it in by the back door of industrial regimentation.

Of all the radical modern reform movements syndicalism has come the nearest to translating the class war into practical concrete action and it is that form of organization and procedure into which the capitalists should most hesitate to drive the laboring classes. Aside from its own socio-economic program, syndicalism has attracted a sympathetic study from many who are not willing to accept its whole economic program, but feel that something must be done to decentralize the overgrown and unwieldy modern national state and to give representative government a more rational and practicable basis, through allowing the representation of economic interests and classes. Further, many exponents of the more orthodox labor-unionism feel that they would gain greatly by giving up the craft union organization and accepting the principles of the industrial union organization.

While syndicalism began as a distinctly French movement it has spread into other European countries, notably Italy. In the United States it has been adopted by a considerable group—the Industrial Workers of the World, who were greatly weakened by the attacks of the plutocrats and patriots during the World War. From the combined influence of France and the United States syndicalism has built up a considerable following in Great Britain.

XII. GILD-SOCIALISM AS A COMPROMISE BETWEEN SOCIALISM AND SYNDICALISM

The movement generally known as gild-socialism means, in its essence, economic decentralization and the solution of the labor problem through the revival of industrial associations like the medieval guilds, adapted to the changed conditions of modern industrialism. Such a proposal dates back to the first half of the nineteenth century, when it was fore-

shadowed by some of the propositions of the English Christian Socialists and Ruskin. Especially congenial has gild-socialism been to modern Catholic social reformers, like Bishop Ketteler, Franze Hitze, Count de Mun and Hilaire Belloc. It also has been defended in a modified form by the French sociologist Émile Durkheim, while it has particularly attracted the younger British labor leaders, such as Mr. Cole and his associates. In a much diluted and modified form it has reached the United States in the so-called "Plumb Plan" for industrial democracy.

In its modern and elaborated form gild-socialism aims to effect a reconciliation between state socialism and syndicalism. The political control and administration, which represents society as consumers and which receives the chief attention of the socialists, will be retained by the state. The management of industrial affairs, which pertains to society as producers and is emphasized by syndicalism, will be turned over to guilds or associations of working men, properly federated into national organizations. This will give essential industrial autonomy and, it is hoped, will stimulate craftsmanship and productivity. Above both political and economic authority will be a joint-committee composed of representatives of the state and the guilds, which will have the final decision on disputed points and on those vital matters which concern the citizens as both producers and consumers.

To many, gild-socialism seems the most promising of the modern reform policies and a clever synthesis of some of the most attractive of radical reform programs. Others, however, deny the possibility of any real separation of political and industrial functions. As Ernest Barker has expressed it, "any doctrine of separation of powers, such as Guild-Socialism advocates, is bound to collapse before the simple fact of the vital interdependence of all the activities of the 'great society' of to-day. Either the State must go, as Syndicalists seem to advocate, and that means chaos, or the

State must remain—and then, if you are to have Socialism, it must be State-Socialism.”

XIII. HENRY GEORGE, THE SINGLE-TAX AND LAND NATIONALIZATION

The great majority of radical reform programs in recent times have centered about attacks upon the methods of production and distribution of the earnings in manufacturing industries and commercial enterprises, but these ignored certain sources of modern social problems and evident causes of poverty and misery involved in the unequal and undemocratic methods of landholding and absentee landlordship. Therefore, it was natural that at least one important reform program should revolve about the proposal to reconstruct the methods of landholding in order to bring them more into harmony with modern democratic principles. The leader in this movement was a brilliant and energetic American, Henry George (1839-97). Living in California in the early days of its civic and industrial development, he was struck with the great increase in land values that took place from purely social causes in less than a decade. Coming to New York the same phenomena attracted his attention in the extreme land values created by social and economic concentration on Manhattan Island. So forcibly was he struck by these facts that he came to regard this increase of real-estate values, due to social influences, and its absorption by private persons as the chief cause of poverty and misery. Consequently, he proposed, in his notable work on *Progress and Poverty* (1879), the general abolition of other forms of revenue and the imposition of a so-called “single-tax” on land, which would turn into the public treasury the unearned or social increment in land values. This process would ultimately drive the landlord out of existence and pave the way for the democratic nationalization of land.

George’s theories attracted the greatest amount of interest

in England, where the evils he attacked were especially prevalent and where the Liberal party found a modified version of his doctrines a fine instrument to be used in attacking their traditional enemies—the Tory or Conservative landlords. Among his followers was the famous scientist, Alfred Russel Wallace, but it remained for David Lloyd George to give these doctrines some preliminary application in legislation. In the Small Holdings Act of 1907 and in his budget of 1909 he made a definite attack upon the vested landed interests. At the outbreak of the World War he was preparing a radical program of agrarian reform for Great Britain, but the close of the conflict found him detached from the reform party and sitting at the Peace Conference with two of the most tenacious defenders of agrarian autocracy in England, Arthur J. Balfour and Bonar Law. In the meantime the Bolshevik Government in Russia had proceeded to carry through a plan of actual land nationalization, but it would seem that this was much more a product of the peculiar aims and long-standing campaign of the Agrarian Socialist, or Social Revolutionary, party in Russia than it was of the direct adoption of the views of Henry George.

Most progressive thinkers differ from Henry George primarily in holding that the single-tax should not be regarded as the sole remedy for modern social problems, though the majority of them would agree that society should in some manner and in large degree absorb these socially created values known as the unearned increment. All would give him credit for having called attention to the fact that the capitalistic manufacturer or merchant is not wholly responsible for the evils and misery of the present order. Some of the vitality of the single-tax discussion has, however, been subsequently destroyed by changed economic conditions, particularly the decrease in the relative importance of landed as compared with other forms of wealth, and the growing fluidity and legal elusiveness of the present modes of landholding.

XIV. BOURGEOIS ATTEMPTS TO ABSORB THE RADICAL PROLETARIAN MOVEMENTS

It could scarcely be supposed that the middle class would sit by and idly contemplate the growth of these threatening proletarian programs and movements without attempting to counteract them—without trying, as one thinker has expressed it, “to set a backfire.” Probably the chief instrument which has been used has been state socialism, or legislation designed to aid and placate the laboring class, while retaining the essence of the capitalistic system, though it must not be forgotten that much state socialism has been a result of proletarian or landlord attacks upon the middle class. The bourgeoisie have hoped to lead the proletariat to trust to the adequacy of the national capitalistic state as an agent for promoting the cause of social reform and the growth of industrial democracy. Further, the middle class has contributed great donations to social relief work and to modern scientific philanthropy, in the hope that such measures will lessen misery, and hence the pressure for more far-reaching reform, and will also attract the gratitude of those who receive aid. This has led certain radical writers derisively to refer to social work as “the wrecking-crew of capitalism.” Such benefactions have not been made solely for the relief of physical privation and suffering, but even for the intellectual and recreational improvement of the lower classes through libraries, Y. M. C. A. organizations, playgrounds and parks.

The more progressive and far-sighted leaders of modern industrialism have developed policies of industrial conciliation designed either to placate the laborers or to get them practically interested in the preservation of the existing order. The best known of such methods are profit-sharing, cooperation, scientific management and industrial welfare work. Some have gone so far as to foster the growth of conservative trade-unionism, such as is represented by the

American Federation of Labor. Of course, many of the modern capitalists still hold tenaciously, with strange fatuity, to the attitude of John Bright and declare for a war to the end with state socialism and industrial democracy. They may probably be regarded as in reality among the most effective workers in behalf of extreme forms of radicalism.

A philosophy has been evolved designed to effect a liberal compromise between capitalism and labor. This has received its chief elaboration in France where it is generally spoken of as the doctrine of *solidarism*. It takes its origin from the doctrines of Comte, the positivists and Leroux regarding the organic unity of human interests. It was further elaborated by the sociologists of the organicist school and has recently been expanded by Léon Bourgeois from the legal point of view; by Charles Gide from the standpoint of the progressive economist; by Émile Durkheim as a profound sociologist interested in practical social reform; and very recently by the German, Nicolai, from a socio-biological point of approach. This doctrine aims at an honest and thoroughgoing attempt to reform the present order, so as to grant essential economic and social justice to the proletariat while retaining the supposedly superior directive and inventive ability of capitalistic enterprise. In its practical program it proposes, on the one hand, an extension of remedial social legislation through state socialism, and, on the other, a great extension of the principle of voluntary co-operation. Its adherents also generally incline toward some considerable decentralization of the administrative powers and functions of the modern national state. Some members of the group lean rather distinctly toward gild-socialism and the representation of economic groups and interests. All in all, it is the one program of reform which embraces the interests of both capitalists and proletariat and which is, at the same time, sufficiently honest, disinterested and progressive to entitle it to respectful consideration.

XV. THE GREAT WAR AND POLICIES OF RECONSTRUCTION

The World War at some time in the future will probably be regarded by the historian as having constituted a crisis or a dividing line in the history of modern social reform movements, but it is too early to predict just what the nature of the resulting social transformation will be. It may perhaps be seen by future historians that back of the struggle of nations was what may have been the beginning of the final struggle between the present social and economic classes—a struggle in which landlord and capitalist will unite against the common enemy in the proletariat. That the feudal landlord has generally succumbed in the course of the struggle, except in England and Hungary, is generally conceded. That labor hoped for the equally decisive termination of the modern order of individualistic industrialism is apparent from what is usually taken as the most profound utterance of labor during the War—the report of the sub-committee of the British Labor party on reconstruction: “The individualist system of capitalist production, based on the private ownership and competitive administration of land and capital, with its reckless ‘profiteering’ and wage-slavery; with its glorification of the unhampered struggle for the means of life and its hypocritical pretense of the ‘survival of the fittest’; with the monstrous inequality of circumstances which it produces and the degradation and brutalization, both moral and spiritual, resulting therefrom, may, we hope, indeed have received a death blow. With it must go the political system and ideas in which it naturally found expression.” They expressed the further significant opinion that “what has to be reconstructed after the war is not this or that government department, or this or that piece of social machinery; but society itself.” Further, during the struggle, as a result of the necessity of maintaining the production of necessary munitions at the highest level, unusual concessions had to be made to labor, a situation which

did not tend to make the proletariat particularly inclined to acquiesce cheerfully in any later restoration of the social and economic *status quo ante bellum*. All countries were compelled to undertake what in times of peace would have been regarded as alarming steps toward complete state socialism. In Russia, the feudal autocracy was overthrown and there followed the first attempt in history to apply Marxian socialism to the reconstruction of a great state. In Germany, the fall of the Junker-bourgeois alliance paved the way for a temporary triumph of revisionist socialism in the German political system, though the chaos after the War prepared the way for the sporadic Stinnes régime of industrial autocracy.

The capitalists did not fail to recognize these various challenges to their very existence as a powerful organized class, nor did they hesitate to take steps to protect their system. Their most effective program was to make patriotism just as far as possible synonymous with rigid adherence to a belief in the sanctity of the capitalistic system and to brand all expressions of proletarian discontent and all plans for radical social reconstruction as products of disloyalty or vile enemy propaganda. Radical leaders were assassinated or sentenced to long terms of imprisonment for far more mild and moderate criticisms of administrative policy than were passed by unnoticed when uttered by political opponents who were members of capitalistic parties. The treatment of Eugene Debs as compared to that of Roosevelt and George Harvey is a case in point. Severe espionage laws were passed, which were little utilized to aid the military department, but were widely made use of to silence expressions of social and economic discontent.

The close of the conflict left a serious situation—a proletariat determined to end an oppressive social and economic order and an organized effort of capitalists to preserve the system to which they owed their economic resources and political prestige. With the coming of peace, the solution of this

problem is what now faces the world, and this solution is bound to be of infinitely greater significance for the history of modern civilization than the redistribution of national boundaries by the Peace Conference. Whether the adjustment will be made in a peaceful manner through a liberal compromise, in which both parties will concede much, or whether it will be made by violence in a bitter class war which can not but end in the termination of capitalism in a most destructive manner, will depend wholly upon the sagacity and statesmanship of those who will lead in the negotiations. What plans of reconstruction will be most used can not be foreseen. The problem has called forth a reconsideration of every one of the proposals of the nineteenth century which have been discussed above, not even excepting a return to the complete individualism of the economic liberals. To the writer there seems little probability that the future will witness any complete adoption of any single program of reconstruction. It is more likely that an eclectic system will prevail, adapted to differing conditions and industries.

A final lesson regarding social reform programs has been taught by the World War and that is, as Hobhouse pointed out a number of years ago in his *Democracy and Reaction*, that the state is bound to be obstructed in effective programs of social reform as long as militarism menaces our civilization. As long as citizens are bowed beneath the burdens of taxation to supply munitions for active warfare, to support vast armament for "preparedness" and to prepare for future holocausts, there will never be adequate funds for thoroughgoing schemes of social reconstruction. A veritable social and economic paradise throughout the Western World could have been created out of the funds expended in this War and in a very real sense the final solution of social problems is bound up with the discovery of some method for discouraging or eliminating war.

XVI. CONCLUDING OBSERVATIONS

Most fair-minded and thoughtful readers will appreciate the fact that the writers considered in this section have discovered defects of the most serious nature in our industrial order and have made earnest efforts to suggest more efficient and equitable forms of social and economic organization. Yet, there are obvious reasons why one may still remain unconvinced as to their adequacy, confirmed as he may be in his belief of the well-nigh hopeless incompetence of the present order. In short, there is real uncertainty as to whether the intelligence of mankind is going to prove adequate to manage the complex problems which have followed in the train of the transformations of material civilization growing out of the Industrial Revolution.

Convincing statistical evidence of the almost indescribable waste and inefficiency of modern methods of producing and distributing commodities has been recently published by a group of anti-socialistic engineers in the famous report sponsored by Herbert Hoover on *Waste in Industry*, and at greater length in Stuart Chase's *The Tragedy of Waste*. Veblen in a number of works, most notably *The Theory of Business Enterprise*, has shown how social service and efficiency have almost disappeared from the concepts of the modern entrepreneur, whose thoughts are circumscribed by the narrow bookkeeping orientation of production for pecuniary profit. The socialists, if they have done nothing else, have made clear for all time the gross inequalities of economic possessions and opportunities in modern society, which only the most sycophantic adulator of wealth could imagine to be closely correlated with differences in ability. Indifference and unrest characterize the proletariat to a distressing degree the world over.

Such are the problems, but most radical programs of social and economic reconstruction overlook insuperable difficulties which reduce the seductiveness of their proposals.

Bowley has recently shown, upon the basis of a careful study of the income of England in 1914 that an equal per capita distribution of the income of England before the War would not have led to the enriching of the whole population to any perceptible degree. He thus proved quite satisfactorily that the only hope for any general prosperity lay in greatly increased production. Bowley's study has been held very generally to be a disconcerting critique of the adequacy of any proposal for communism in property as a solution of our industrial and social ills. Even radically inclined but scientifically-minded writers are beginning to question the validity of the schemes for industrial democracy which are involved in most of the programs analyzed above. The undeniably great differences in native ability which exist in every population raise the pertinent question of whether even political democracy can be permanently practicable in the face of the fact that only a small minority in society possesses superior creative and directive ability. If this is so, then the much more complicated economic and social problems will be even less susceptible to control and direction through the principles of majority rule.

The problem, then, would seem to be about that which was recognized by Saint-Simon and Auguste Comte, namely, the creation of a social order in which the minority of the able will dominate. Yet this domination must not be of the selfish and short-sighted type of modern capitalism, but must combine efficiency with a broad social point of view and must in some manner stimulate the masses to their best efforts. In other words the new order must be one in which the service motive has supplanted the profit incentive. Perhaps the most promising recent plan involving these requirements is that of Veblen with his scheme for turning over modern industrial society to properly trained and socialized technicians. Another possibility would be the scientific management movement of Frederick W. Taylor and his followers put in the proper social perspective and setting. The prob-

lems of social reform are as pressing as they are complicated, and require the utmost freedom in discussion and proposals for improvement. Hence the folly of repressing liberal and radical movements and discussion!

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CHAPTER X

CONSTITUTIONAL GOVERNMENT, REPUBLICANISM AND DEMOCRACY

I. CONSTITUTIONAL GOVERNMENT AND THE POPULARITY OF REPUBLICS

ONE of the most important and easily recognized of the results of the Industrial Revolution upon Western society has been the political effects, which have been manifested in the development of constitutionalism, democracy, nationalism and imperialism. All of these leading political developments of the nineteenth and twentieth centuries rest primarily upon the forces and influences created by the combined effects of the Commercial and Industrial Revolutions.

In general, the political institutions and policies of the Western World in the nineteenth and twentieth centuries reflected the economic, social and political ambitions and ideals of the capitalist. These were chiefly legal protection of property, enforcement of contract, laissez-faire with respect to economic life and activities, and large freedom of personal and business initiative. Everywhere the bourgeoisie have been fearful of state interference with economic activities, except where this interference has been believed to foster the interests of the capitalist class, and have been opposed to all types of social legislation designed to protect the working classes and likely to interfere with the complete freedom of the employer to deal as he sees fit with his employees.

In the latter half of the nineteenth century, however, the industrial proletariat began to become articulate and worked

vigorously for universal suffrage, democracy and a program of legislation designed to advance the well-being of the workers. At times they cooperated with capitalistic governments in state socialistic enterprises. On the other hand, the Marxian Socialists refused to cooperate with the bourgeois political order, resolutely opposed conventional state socialism, and awaited the dawn of the socialistic millennium when the workers would own the means of production and distribution and would conduct economic affairs on the basis of service rather than of profit.

With the exception of the English, the important constitutions of to-day have been set up since the onset of the Industrial Revolution. That of England has remained largely traditional and unwritten, but in practise it has been fitted to the new economic order of which the main assumptions are so explicit in the more formal instruments of other countries.

A constitution may be defined in general terms as the organic instrument of government which describes and determines the form of political institutions and machinery, and also prescribes the rights and immunities of the individual citizen. Its great advantage to the middle-class business man is that it gives a certain fixity to the political system and renders him and his business relatively free from arbitrary change and interference on the part of the government. Not only are life and liberty made secure within prescribed limits, but the rights and privileges of property have also been carefully defined in most constitutions since the middle of the eighteenth century. This notion of business immunity has received its most notable recognition in the judicial interpretation of the "due process" clause in the Fourteenth Amendment to the Federal Constitution of the United States. This has served to make American business practically free, not only from legislative interference, but also from the effective opposition of labor organizations. The relative stability of constitutional governments and their

specific guarantees of political and economic rights have been the chief reasons why the triumph of the bourgeoisie in politics throughout the Western World has been characterized by the immediate adoption of written constitutions.

In general, the bourgeoisie have been favorable to the republican form of government, because of the fact that monarchy symbolized to them, on the basis of the historic experiences of two previous centuries, arbitrary royal rule and interference with the business and prosperity of the middle class. Therefore, bourgeois political domination has generally been followed by the establishment of the republican form of government and the adoption of written constitutions. This has not been invariably the case, because in certain instances the monarchical tradition has been too strong for the middle class to uproot at once. Further, the student should be on his guard lest he consider that a republic necessarily means a more liberal form of government than can exist under a constitutional monarchy. There is little doubt that the monarchy of England provides for a government more democratic and more responsive to the wishes of the people than is the case with the republic of the United States.

The first great group of written constitutions in modern society were those adopted by the various American states after the Declaration of Independence in 1776. Most of these embodied the fundamental bourgeois ideals of freedom from arbitrary governmental interference and the protection of personal rights and property interests. Back of them were the English Bill of Rights of 1689 and the writings of such apologists for the middle class as John Locke. The bill of fundamental rights and immunities for all men and the guarantees of economic liberty were embodied in the first ten amendments to the American Constitution—really an integral part of the document, since they were all added immediately. The French Declaration of the Rights of Man, drawn up in 1789, mentions property among the “natural

and imprescriptible rights of man" in Article 2, and in Article 17 also describes it as "an inviolable and sacred right."

Opposition to constitutions and to the economic ideas of the Industrial Revolution in central Europe came from the lands in which agrarian aristocracy and privilege were still dominant, Prince Metternich of Austria being the outstanding figure. He was able to delay a Prussian constitution until 1850, though the customs union had been formed generations earlier and the old economic régime was passing away. Piedmont in Italy got a constitution in 1848, which was revised and extended in 1861 to fit the new-born kingdom. Austria also secured a constitution in 1861. Russia, even more backward economically than Austria, did not adopt anything approaching a real instrument of government until the sporadic revolution of 1905. The minor European countries adopted constitutions at various times during the nineteenth century, that of industrial Belgium being widely studied as a model after its appearance in 1830-31.

Some of the characteristics of the pre-constitutional age have tended to hang over into the era of constitutions. The conception of the divine right of kings has come down to us in the form of the divine status of constitutions. The vested interests and the conservative elements frequently regard a constitution, which was actually created as a result of many compromises and was looked upon by its framers as a very imperfect experiment, in the light of a very revelation of God Himself, too sacred to be criticized, to say nothing of being seriously altered or entirely replaced. In the same way that the theory of the divine right of kings became archaic and out of adjustment with the psychology and the social and economic interests of the seventeenth and eighteenth centuries, so constitutions, which were drawn up a century or a half-century ago, have come to be poorly adapted to the needs of a far different civilization from that which accompanied their formulation. This is a defect

which is likely to become even more serious in the light of the fact that cultural alterations take place now with far greater rapidity than ever before. Then, constitutions, which are but a means to the end of orderly and free government, tend to come to be regarded as an end in themselves. It is doubtful if the excesses of divine-right panegyric under Louis XIV were greater than the absurdities of constitution eulogy in our own age: It is difficult to keep in mind or practise the basic truth, so well phrased by Thomas Jefferson, that constitutions are made to serve society and not society to worship constitutions. A characteristic product of the constitution cult is the following excerpt from Harry F. Atwood's *Back to the Republic*, a book which has enjoyed an amazing popularity with the American plutocracy:¹

And so, on this great continent, which God had kept hidden in a little world—here, with a new heaven and a new earth, where former things had passed away, the people of many nations, of various needs and creeds, but united in heart and soul and mind for the single purpose, builded an altar to Liberty, the first ever built, or that ever could be built, and called it the Constitution of the United States. . . .

O marvelous Constitution! Magic parchment, transforming word, maker, monitor, guardian of mankind! Thou hast gathered to thy impartial bosom the peoples of the earth, Columbia, and called them equal. Thou hast conferred upon them imperial sovereignty, revoking all titles but that of man. Native and exotic, rich and poor, good and bad, old and young, the lazy and the industrious, those who love and those who hate, the mean and lowly, the high and mighty, the wise and the foolish, the prudent and the imprudent, the cautious and the hasty, the honest and the dishonest, those who pray and those who curse—these are “We, the people of the United States”—these are God’s children—these are thy rulers, O Columbia. Into our hands thou hast committed the destinies of the human race, even to the omega of thine own destruction. And all thou requirest of us before we o’erstep boundaries blazed for guidance is what is required of us at every railroad crossing in the country: “Stop. Look. Lis-

¹ H. F. Atwood, *op. cit.*, pp. 66-67.

ten." Stop and think. Look before and after and to the right and left. Listen to the voice of reason and to the small, still voice of conscience. . . .

These abuses in the way of constitution worship have been most evident in the United States, in part because of the antiquity of the American constitution and in part because of the degree to which this document is a bulwark of the special privileges of the vested plutocratic interests. This attitude appears not only in such silly brochures as H. F. Atwood's widely circulated *Back to the Republic* and *Safeguarding American Ideals*, but also in such a solemn "masterpiece" as James Montgomery Beck's *The Constitution of the United States*. That a recognition of this state of affairs is not wholly a product of Muscovite subvention may be seen from the judicious criticism of the American constitutional system in William MacDonald's *A New Constitution for a New America*, the work of an eminently conservative, respectable and balanced writer wholly devoid of any dominating compulsion to shed capitalistic blood.

II. THE RISE AND FALL OF DEMOCRACY

1. *What Is Democracy?*

Few subjects have received more attention in the solemn prose of our day than that of democracy: its failures, successes, achievements and disappointments. The literature of disillusionment and defense has been voluminous and earnest, indignant and exuberant. As James Harvey Robinson and others have suggested, however, it is often true that a calm historical survey of a problem will do more to clarify the issues involved than a frontal attack or an emotional defense. It is such a historical analysis that the writer proposes to submit in the following pages.

We shall here attempt: (1) to define democracy as it has been understood by the majority of its adherents; (2) to in-

dicating the outstanding stages in its historical development; (3) to set forth the basic assumptions upon which the democratic propaganda was founded; (4) to determine how far these assumptions have stood the test of historical experiment and the advance of scientific knowledge; and (5) to estimate the outlook for democracy in theory and practise as a form of political organization and a type of intellectual attitude.

In defining democracy it is necessary to keep in mind what its original protagonists actually meant by the term. This is more accurate and relevant than to adopt one of the newer types of definitions which have been brought forward by those who are in sympathy with democracy but are conscious of the fact that, as originally conceived, it is scarcely capable of enlisting enthusiastic support. When the democratic movement was organized and launched democracy literally meant popular control of political processes, something which it was believed could be obtained through majority rule and universal suffrage. Of course, it was hoped that this popular control of political life would have rather definite effects upon society in general, but democracy was, nevertheless, conceived of chiefly in the political mold. Therefore, such a definition of democracy as one to the effect that democracy is a system of society which will enable every individual to develop to the highest possible degree the latent potentialities of his personality, must, however excellent the underlying notion, be rejected as not historical. We must test the validity of democracy by its achievements as a political movement.

2. The Origins of Democracy

The history of democracy can be disposed of very rapidly, as democracy is an achievement which is of very recent origin, however long certain necessary antecedents may have been in process of development. We hear much of the de-

mocracy of ancient Athens, but this bore no resemblance to popular rule in politics. It was nothing more than a combination of direct and representative government by the aristocracy. For a half-century or more after 1825 it was customary for historians and political scientists to ascribe the origins of democracy to the Germanic folk-moot, but the researches of Brunner and others served to show that there was precious little which was democratic in the folk-moot. The folk-moot bore a remarkable resemblance, as far as democracy is concerned, to a contemporary national party convention in the United States where the delegates assemble with solemn dignity to give assent to the slate and policies prepared in advance by the party managers. It was even easier to demonstrate that the folk-moot had little or no direct connection with modern democratic institutions. The indispensable prerequisite of democratic government was representative political institutions, and these were produced by the bourgeoisie who gradually came to power following the Commercial Revolution of the fifteenth to the eighteenth centuries. This emergence of representative government led to the assumption of more and more power by the elective element in the government. But representative government did not necessarily mean majority rule or democratic government. These awaited the successful execution of the movement for universal suffrage in the nineteenth and twentieth centuries. The only democratic institution realized before the nineteenth century was the New England town-meeting, but this was rarely associated with universal suffrage and was limited to local government processes and problems.

The working classes down to the time of the Industrial Revolution, with the exception of the few engaged in manufacturing, had been primarily agricultural peasants. They had been scattered in their residence, were essentially illiterate and were dominated in their outlook by stability, conservatism and docility. Only when very deeply stirred by

the grossest form of abuses did they attempt any concerted activity, as for example, the peasant revolts in medieval England and at the time of the Reformation in Germany. The peasantry were, in short, essentially victims of custom and tradition, and were relatively easy to keep in a position of economic, social and political subordination. The new urban proletariat presented quite a different situation. They were concentrated in relatively small areas, were brought together in large numbers daily, were subjected to the same abuses, and inevitably developed a considerable solidarity and general uniformity of opinion and aspiration. Very early they began to conceive of the possible value of the vote, in order that they might influence public policy and secure legislation which would better their lot.

Therefore, the great political aspiration of the proletariat during the nineteenth century was the realization of universal suffrage. At the opening of the nineteenth century the masses were excluded from the right to vote in every modern state. By the close of the century they had gained this privilege in every progressive country of the Western World. The first example of universal suffrage in Western society took place in the election of representatives of the French Estates-General in the winter and spring of 1788-89. This, however, was not a conscious policy, but a fluke resulting from the fact that Necker was too indolent to prepare any plan to exclude the peasants from the right to vote. In the United States, universal male suffrage was not secured to any notable degree until the period of Andrew Jackson following 1828. In England, while there was slight increase of the suffrage in 1832, even the skilled workers in the city and country were not able to vote as a class until the laws of 1867-84 had been secured through the efforts of Disraeli and Gladstone. Not until 1918 did England provide in a thoroughgoing way for universal male suffrage. France was the first state to provide for universal suffrage in a permanent fashion. As a result of the Revolution of 1848, universal

male suffrage was prescribed by law, and, in spite of the reaction under Napoleon III, this law was never abolished. The German imperial constitution of 1871 included a clause permitting universal male suffrage. In Austria, universal suffrage was secured by laws of 1896 and 1907, though in Hungary universal suffrage was not achieved until after the close of the war in 1918. In Italy universal suffrage was assured as a result of the legislation of 1882 and 1912. In Russia, wide-spread suffrage was not secured until the revolution of 1917. With the establishment of the proletarian control in November, 1917, an interesting innovation was introduced, which provided for the exclusion from the suffrage of those who did not engage in manual labor. This was a reversal of the rule which had dominated in the nineteenth century, when only those with a property qualification were able to vote, with the result that the working classes were pretty generally excluded from this right. Most of the minor states of western Europe have, at some time in the latter part of the nineteenth century, introduced universal suffrage.

The last great achievement of widening the suffrage has been associated with the development of the woman suffrage movement. The first notable advance in this direction was embodied in the step taken by New Zealand in 1893, when women were given the right to vote. The precedent of New Zealand was followed in Australian states before the close of the nineteenth century. The first great Western state to make possible general woman suffrage was the United States, as provided in the Nineteenth Amendment to the Constitution, adopted in 1919. Limited woman suffrage was allowed by the English law of 1918, and many of the new democratic governments of Europe provide for it. In this way, the great proletarian aspiration for the universal right to vote has been realized.

It may safely be said that something approaching democratic institutions on a large scale first appeared in the

United States, where they came into being during the so-called "Jacksonian period." They were the product of a movement which united the popular impulse in the rising industrial towns of the East to the individualism, democracy and idealism of the ever-expanding frontier of the West. The American impulse had some influence on the European developments but these latter were most powerfully stimulated by the results of the growing industrialism of western Europe. The dates given above concerning the realization of universal suffrage in the various states of Europe will indicate the approximate time of the theoretical emergence of popular political institutions.

3. *The Fundamental Assumptions of Democracy*

We may now consider the fundamental assumptions upon which the democratic movement was based, remembering that to be fairly judged the views of its supporters must be examined in terms of the state of political development and scientific knowledge between fifty and a hundred years ago and not in the light of the political experience or scientific data available in 1928. Certain premises which we can to-day regard as discredited might have been legitimately entertained by those not in possession of our present political experience or our contemporary scientific knowledge concerning man and society.

In the first place, the protagonists of democracy built their theory upon the assumption of the essential permanence of a simple type of agrarian society. Jefferson himself, scarcely a defender of any extreme type of democracy, frankly stated that he believed that even republican government could only coexist with society founded on an agricultural basis. As he himself stated this proposition:²

I think our governments will remain virtuous for many

² T. Jefferson, *Works* (Ford edition), Vol. IV, pp. 479-80.

years; as long as they are chiefly agricultural; and this will be as long as there shall be vacant lands in any part of America. When they get piled up on one another in large cities as in Europe, they will become as corrupt as in Europe.

Hence, we can scarcely condemn the original sponsors of democracy if the system which they promulgated failed to prove adequate to the problems forced upon it by the complex industrial civilization of the present day. Yet, we should also remember that the fact that democracy has tended to break down in urban civilization does not necessarily prove that it would have been successful even if society had remained agricultural in character.

Another assumption which was involved in the democratic complex was that of the laissez-faire theory of government. It was held by most of the exponents of democracy that the best government was the one governed least. This was notably true of the American apostles of democracy, though it must not be forgotten that there were notable exceptions, such as the socialistic drive for democracy and universal suffrage under such leaders as Ferdinand Lassalle who frankly repudiated the laissez-faire ideal. It will be conceded by all that a form of government which might have directed successfully a Spencerian type of individualistic society, would be far less capable of controlling with efficiency a society dominated by the ideal of extensive state-interference.

A central thesis of the supporters of historic democracy was the firm belief in the essential equality of all men, the observed existing differences being assigned to inequalities of opportunity. The earlier American propagandists of a more liberal or republican political system did not believe in the equality of man, however much they may have believed in the metaphysical equality of all before the law or their theological equality before God. Jefferson, for example, accepted with some qualifications the Aristotelian dogma

that some are born to rule and others to serve. He was only willing to trust to the people's judgment as to who shall rule them. He believed that the people could be trusted to choose the wisest men—men like Jefferson—to lead them, and his own experience seemed to vindicate his judgment. The people turned out his opponents, the Federalists, and then proceeded to elect, first Jefferson himself and then his satellites, Madison and Monroe, consecutively for two terms each. The Sage of Monticello passed to his "fathers" before Monroe was succeeded by the son of his Federalist rival. Jefferson's conception of the natural aristocracy which should rule society is well stated in the following passage from a letter to John Adams written in 1813:³

For I agree with you that there is a natural aristocracy among men. The grounds of this are virtue and talents. Formerly bodily powers gave place among the *aristoi*. But since the invention of gunpowder has armed the weak as well as the strong with missile death, bodily strength, like beauty, good humor, politeness, and other accomplishments, has become but an auxiliary ground for distinction. There is also an artificial aristocracy, founded on wealth and birth, without virtue and talents, for with these it would belong to the first class. The natural aristocracy I consider as the most precious gift of nature, for the instruction, the trusts, and the government of society. And indeed it would have been inconsistent in creation to have formed man for the social state and not to have provided virtue and wisdom enough to manage the concerns of society. May we not even say that that form of government is the best which provides most effectively for a pure selection of these natural *aristoi* into the offices of government? The artificial aristocracy is a mischievous ingredient in government and provision should be made to prevent its ascendancy.

The "honest-to-God" democrats of the Jacksonian and post-Jacksonian period, however, believed or pretended to believe that all men were essentially equal in ability, and

³ T. Jefferson, *Works* (Ford edition), Vol. IX, p. 425.

hence uniformly fitted to cast their votes and hold office. It was also held that no special training or experience was essential to the successful execution of the functions of any political office. Indeed, some of the Jacksonians even went so far as to declare that a long and successful career in office was the most serious disqualification for political life on account of the potential development of the bureaucratic spirit. It was held that a uniform system of education open to all would produce complete cultural and intellectual uniformity in society. Hence the democratic movement was associated with an impetus to popular education.

Of course, this theory of equality and the associated doctrine of the fitness of all to hold office was not so absurd as it has now become in the light of contemporary knowledge of differential psychology and the increasingly complicated nature of governmental problems. Particularly was this true of such views when held by those dwelling in the frontier society of Jackson's day. There was a much closer approximation to equality here than in most other societies or cultures. The severe selective process active in frontier life operated to make the surviving pioneers and frontiersmen a rather uniform population, as the weaker elements died or were killed off. Moreover, a man who could weather the dangers and hardships of migration westward in those days and contend successfully against Indians and wild beasts after settling on the frontier was likely to be able to execute the crude functions of government which prevailed in such areas, namely, hanging horse-thieves, sorting the mail monthly, settling boundary disputes and directing the building of corduroy roads.

It was further contended by the opponents of democratic theory that the mass of the people were not only politically competent but would take a very ardent interest in all phases of political life and discussion once the right to vote was extended to them. There was full confidence that universal suffrage as a legal right would certainly and immediately produce universal suffrage as a practical political fact. It

was believed and hoped that the people would veritably mob the polls at daybreak on each election morning in order to exercise the God-given privilege of casting their ballots. This assumption was not so absurd a century ago when most of the functions of government related to local needs and processes and intimately touched the daily life of the people in ways that they could visualize and feel.

Closely associated with the allegation that the mass of the people would evince a very active interest in political affairs as soon as they were given the opportunity to participate directly therein was the crucial hypothesis that the people would very carefully scrutinize candidates and policies in a coolly rational manner, size up all political situations with a fishy eye, and then render a deliberate choice based upon prolonged and solemn reflection upon all the salient facts available in the circumstances. The democratic dogmas were formulated when the dominant individual and social psychology was based upon the so-called Benthamite "felicific calculus." This assumed that man is a cool, calculating and eminently deliberative animal who calmly decides each and every act upon the basis of the relative amount of pleasure to be secured and pain to be avoided. This hypothesis of human nature implied that the voter would coldly scrutinize every political policy and party candidate from this angle. This rationalistic type of political psychology dominated political thinking from Bentham to Bryce, and was not thoroughly laid at rest until the appearance of Graham Wallas' *Human Nature in Politics*, published in the first decade of the twentieth century. Humorous as this view of human behavior may now seem, this was not so insane a hope before experience had shown the contrary to be true and prior to the progress of social psychology which has proved the fundamentally irrational nature of group behavior.

Another of the arguments for democracy, usually formulated by those who had some apparent misgivings concern-

ing the administrative efficiency of democracy or the rational qualities of the masses, was that, even if the people were not capable of keen analytical reasoning powers, at least they were keenly sensitive to great moral issues. They could be trusted to a far greater degree than the educated and capable minority in the way of sensing injustice and promoting idealistic causes. As evidence in point such things were cited as the popular support of the movement against slavery and, more recently, the alleged democratic basis of the prohibition movement.

The democratic theory was formulated for the most part, with the exception of the work of the socialists, in an age which held to the theory of political determinism in history. It was asserted that political institutions were primary in social causation, and that a political system would be able fundamentally to alter civilization. There was little understanding of the fact that valid political institutions are, quite to the contrary, the outgrowth of deeper economic and social conditions.

The democratic theory was also worked out in general harmony with the philosophy of unmitigated nationalism. It was believed that domestic political institutions could be developed *in situ* with little attention to the prevailing political tendencies of the world or the existing state of international relations. Democratic dogma was not, of course, unique in this respect, for the nationalistic obsession dominated the outlook of monarchs and aristocrats as well.

4. *How Science and History Have Dealt with Democratic Hopes*

Such were the underlying premises upon which the democratic program was elaborated and synthesized. We have tried to make it apparent in passing that these premises were not necessarily preposterous in the light of social and cultural conditions a hundred years ago and in view of the

existing state of psychological knowledge. But the basic socio-economic conditions out of which the democratic dogma developed have since profoundly altered, and modern psychology has proved that most of the theoretical assumptions underlying the democratic hypothesis are untenable.

Extremely striking and extensive have been the changes in the social and cultural setting of political institutions since the days of the agrarian New England township of John Quincy Adams and the crude frontier society of Jackson. In the place of the simple agricultural civilization, with its relatively few and rudimentary political problems, we have our highly complicated urban industrial civilization which presents an ever-increasing range and variety of conditions and situations that must be regulated in some degree by political action. In other words, the whole set of life conditions which lay back of the democratic movement have all but disappeared. Doctor Will Durant has admirably summarized this outstanding fact, so essential in evaluating the validity of the democratic pretensions to-day:⁴

All those conditions are gone. National isolation has gone, because of trade, communication, and the invention of destructive mechanisms that facilitate invasion. Personal isolation is gone, because of the growing interdependence of producer, distributor, and consumer. Skilled labor is the exception now that machines are made to operate machines, and scientific management reduces skill to the inhuman stupidity of routine. Free land is gone, and tenancy increases. Free competition decays; it may survive for a time in new fields like the automobile industry, but everywhere it gravitates towards monopoly. The once independent shopkeeper is in the toils of the big distributor; he yields to chain drug stores, chain cigar stores, chain groceries, chain candy stores, chain restaurants, chain theaters—everything is in chains. Even the editor who owns his own paper and molds his own mendacity is a vestigial remnant now, when a thousand

⁴ W. Durant, "Is Democracy a Failure?" in *Harper's Magazine*, October, 1926, p. 557.

sheets across the country tell the same lie in the same way every day better and better. An ever decreasing proportion of business executives (and among them an ever decreasing number of bankers and directors) controls the lives and labors of an ever increasing proportion of men. A new aristocracy is forming out of the once rebellious bourgeoisie; equality and liberty and brotherhood are no longer the darlings of the financiers. Economic freedom, even in the middle classes, becomes rarer and narrower every year. In a world from which freedom of competition, equality of opportunity, and social fraternity have disappeared, political equality is worthless, and democracy becomes a sham.

The laissez-faire theory of political inactivity has given way before differing degrees of state-intervention, extending all the way to overt state socialism. Even in the United States under the sway of the Republican party and its theoretical individualistic philosophy there has come about a degree of state activity which would have caused Jefferson to be filled with the greatest alarm and the keenest disapproval. The industrialization and urbanization of modern life has created a host of new issues which not even a plutocratic and individualistic political organization can ignore. Along with this inevitable increase of state intervention brought about by the growing complexity of modern civilization there has come a considerable increase of sumptuary legislation which has resulted from the enfranchisement of the pious masses, particularly the peasantry, who are consumed by a passionate desire to be their brother's keeper and are filled with envy over the alleged wickedness of their urban contemporaries. Mr. H. L. Mencken thus describes the nature of this "government by envy" which has markedly increased the restrictions upon personal liberty and civilized modes of life:⁵

The yokel has room in his head for only one idea. This is the idea that God regards him fondly, and has a high respect for him—that all other men are out of favor in heaven and abandoned to the devil.

⁵ H. L. Mencken, *Notes on Democracy*, pp. 35-43.

But under this pretention to superiority, of course, there lies an uncomfortable realization of actual inferiority. The peasant hates; *ergo*, he envies—and “l’envie” as Heine said to Philarète Chasles, “est une infériorité qui s’avoue.” The disdain that goes with genuine superiority is something quite different; there is no sign of it in him. He is so far from it, indeed, that he can imagine no higher delights than such as proceed from acts which, when performed by the hated city man, he denounces as crimes, and tries to put down by law. It is the cabaret that makes a Prohibitionist of him, not the drunkard in the gutter. Doomed himself to drink only crude and unpalatable stimulants, incompetently made and productive of depressing malaises, and forced to get them down in solitary swinishness behind the door, he naturally longs for the varieties that have a more delicate and romantic smack, and are ingested in gay society and to the music of harps and sackbuts. That longing is vain. There are no cabarets in the village, but only sordid speak-easies, selling raw spirits out of filthy jugs. Drinking cider in the barn is so lonely as to be a sort of onanism. Where is the music? Where are the whirling spangles, the brilliant lights? Where is the swooning, suffocating scent of the lilies-of-the-valley, Jockey Club? Where, above all, are the lost and fascinating females, so thrillingly described by the visiting evangelist? The yokel peeps through a crack in the barn-door and glimpses his slatternly wife laboriously rounding up strayed pigs: to ask her in for a friendly bumper would be as appalling as asking in the cow. So he gets down his unappetizing dram, feels among his glabella for the beginning headache, and resumes his melancholy heaving of manure—a Prohibitionist by conscience, double-riveted and immovable.

In all his politics this envy is manifest. He hates the plutocrats of the cities, not only because they best him in the struggle for money, but also because they spend their gains in debaucheries that are beyond him. Such yellow backs as “Night Life in Chicago” have done more, I believe, to propagate “idealism” in the corn-and-hog belt than all the eloquence of the Pfeffers and Bryans. The yokels, reading them in secret, leave them full of a passionate conviction that such Babylonish revels must be put down, if Christianity is to survive—that it is obviously against the will of God that a Chicago stockbroker should have five wives and fifty concubines, and an Iowa swineherd but one—and that

one a strictly Christian woman, even at the purple moments when wits and principles tend naturally to scatter. . . .

The rustic, alone upon his dung-hill, has time to nurse his grievances; the city moron is diverted from them by the shows that surround him. There was a time when yellow journalism promised to prod him to dudgeon, and even to send him yelling to the barricades. But the plutocracy has deftly drawn its fangs, and in its place are the harmless tabloids. They ease his envy by giving him a vicarious share in the debaucheries of his economic superiors. He is himself, of course, unable to roar about the country in a high-powered car, accompanied by a beautiful colored girl of large gifts for the art of love, but when he reads of the scions of old Knickerbocker families doing it he somehow gets a touch of the thrill. It flatters him to think that he lives in a community in which such levantine joys are rife. Thus his envy is obscured by civic pride, by connoisseurship, and by a simple animal delight in good shows. By the time the tale reaches the yokel it is reduced to its immoral elements, and so makes him smell brimstone. But the city proletarian hear the frou-frou of perfumed skirts.

While the present writer would scarcely go as far as Mr. Mencken in localizing the invidious sentiment in bucolic areas—certainly no soil provides a ranker growth of envy than the small city and the country village—yet, it is certain that, in singling out the “sour-grapes complex,” he has put his finger on the main-spring and fountain-head of restrictive sumptuary legislation, so often assigned to the superior moral sentiment of the common man.

The doctrine of the fundamental equality of all men has been dealt a rude shock by modern differential biology and psychology which have revealed the existence of extensive individual differences of equipment and ability on the part of those inhabiting the same community. The most comprehensive effort along this line was embodied in the famous army mental tests which covered the unusually large and representative sample of 1,700,000 recruits. The following statistics indicate the distribution of mental capacity in this

tested group, which certainly was representative of the country at large:

Grade	Mental Age	Percentage of the total
A	18-19	4½
B	16-17	9
C+	15	16½
C	13-14	25
C—	12	20
D	11	15
D—	10	10

These series of tests, then, revealed the fact that only about thirteen per cent. of the population can be described as superior types and capable of distinguished leadership. The majority range from intellectual mediocrity to practical incompetence. While this does not mean that majority rule is always the rule of the stupid, since the leaders may on occasion guide the masses, still it does show that merely by counting off noses we can not expect to secure sagacity or wisdom.

Many writers, such as Professor Cooley, have contended that though the masses may not be intellectually distinguished, nevertheless they possess great innate shrewdness in selecting their leaders. It would hardly seem that this thesis can be borne out by such concrete tests as the selection of the presidents of the United States since the Jacksonian period. The outstanding presidents during this period: Lincoln, Cleveland, Roosevelt and Wilson, have all been chosen as the result of an accident or a political fluke. In other words, modern differential biology and psychology have unquestionably demonstrated the fact that if we are to secure a type of political guidance adequate to cope with the difficult problems of to-day we must insure the domination of the superior types and not trust to the results of the "deliberations" of the common people. It would seem that such

data as are now available would either justify the restriction of the voting privilege to those above the D grade or would support a class system of voting in which additional voting power would be assigned to those possessed of a superior intelligence quotient.

The novel problems which have been created by contemporary civilization and must receive governmental attention are so complex and technical in many cases as to render entirely absurd the democratic theory that all persons who are able to keep out of the common jail or the poor-house are capable of holding political office and executing its functions with competence. Many political offices would require for an adequate grasp and solution of the problems facing the incumbent a degree of technical knowledge as great as that possessed by a distinguished economist, technician, physician or law professor, and a national legislator should be more broadly and precisely educated than the average college professor. Yet, as Will Durant has well said, we require much more technical preparation for a physician or druggist than we insist upon for a congressman:⁶

The evil of modern democracy is in the politician and at the point of nomination. Let us eliminate the politician, and the nomination.

Originally, no doubt, every man was his own physician, and every household prescribed its own drugs. But as medical knowledge accumulated and the *corpus prescriptionum* grew, it became impossible for the average individual, even for solicitous spinsters, to keep pace with the *pharmacopœa*. A special class of persons arose who gave all their serious hours to the study of *materia medica*, and became professional physicians. To protect the people from untrained practitioners, and from those sedulous neighbors who have an interne's passion for experiment, a distinguished title and a reassuring degree were given to those who had completed this preparation. The process has now reached the point where it is illegal to prescribe medicines unless one has re-

⁶ Durant, *loc. cit.*, p. 563.

ceived such training, and such a degree, from a recognized institution. We no longer permit unprepared individuals to deal with our individual ailments or to risk our individual lives. We demand a lifetime's devotion as a preliminary to the prescription of pills.

But of those who deal with our incorporated ills, and risk our hundred million lives in peace and war, and have at their beck and call all our possessions and all our liberties, no specific preparation is required; it is sufficient if they are friends of the Chief, loyal to the Organization, handsome or suave, hand-shakers, shoulder-slappers, or baby-kissers, taking orders quietly, and as rich in promises as a weather-bureau. For the rest they may have been butchers or barbers, rural lawyers or editors, pork-packers or saloon-keepers—it makes no difference. If they have had the good sense to be born in log cabins it is conceded that they have a divine right to be president.

To be sure, the situation can be corrected to a slight degree by having expert guidance for ignorant legislators and administrators, but some modicum of intelligence and information is essential in order even to exploit expert advice with any effect or competence. The average congressman or state legislator of to-day might well be capable of deciding whether or not a new plank should be added to a bridge or whether a common pound should be repaired, but it would be difficult for so untrained a man to weigh or utilize expert judgment with respect to international financial problems, the tariff, government control of railroads, state ownership of coal mines, public health, the Dawes Plan, war-guilt, or the regulation of radios and airplane traffic. In other words, the day is over when government can be conducted by rule of thumb, the rhetorical canons of Isocrates or Quintilian, or the spicy parliamentary repartee of the seasoned politician, such as the estimable and charming Nicholas Longworth. The day of the adequacy of "pipe-organ" politics has now definitely passed.

Not only have the problems which must be settled by governmental control or supervision become much more numerous and complex in the last century, but the quality of our pub-

lic officials has declined to an alarming degree. The writer is far from desiring to share in the conventional and unthinking eulogy of the "Fathers," yet no informed person could well suggest that the caliber of our public servants to-day matches that of the period from 1790 to 1828. We have been saved from national disintegration because of the fact that in the last century we have witnessed a transformation in political practise, whereby we no longer desire or expect leadership in the government. Rather, the great economic interests have, for all practical purposes, taken over the running of the government and desire in political office those who will take orders with docility. Government has practically become the "bell-hop service" of the interests. Men of great personal ability, real dignity, wide learning and independence of character are not wanted in political offices. They do not invariably take orders with complete servility and execute them with fidelity. Yet, government by the interests is not so simple as some seem to believe. There is highly divided counsel in the orders given to the "bell-hops," owing to the diversification and conflict of interests.

The above considerations explain in large part just why the firm of J. P. Morgan and Company engaged John W. Davis for the firm attorney but recommended Calvin Coolidge for the presidency with enthusiasm, why the business interests are highly suspicious of an able conservative like Herbert Hoover, and why a man like Nicholas Murray Butler has never been looked upon with favor by the business interests as presidential material. Perhaps the chief service of the democratic illusion at present is that it enables countries like the United States to operate the "bell-hop" system successfully and yet keep the people reasonably well satisfied by means of the delusive fiction that they are running matters through their elected representatives. One can scarcely imagine, however, that this artifice constitutes any permanent or successful solution of the problems of contemporary political control.

The old assumption that the masses would evince an all-absorbing interest in public matters the moment that they received the vote has been discredited by experience as effectively as the dogma of equality has been dissipated by differential biology and psychology. Studies of non-voting in the United States by Merriam, Gosnell, Schlesinger, Eriksson and others have shown that even in presidential elections, which evoke the most wide-spread interest and speculation, only about half of the qualified voters turn out to cast their ballots. The following statistics as to the decline of the actual vote as compared with the total number eligible to suffrage in the United States since 1856 present an illuminating picture of what Professors Schlesinger and Eriksson well designate "the vanishing voter" (see *New Republic*, October 15, 1924):

<i>Year</i>	<i>Actual vote</i>	<i>Eligible vote</i>	<i>Percentage voting</i>
1856	4,194,088	5,021,956	83.51
1860	4,676,853	5,555,004	84.19
1864	4,024,792	4,743,249	84.85
1868	5,724,686	7,208,164	79.42
1872	6,466,165	8,633,058	74.90
1876	8,412,733	9,799,450	85.84
1880	9,209,406	11,024,900	83.53
1884	10,044,985	12,412,538	80.92
1888	11,380,860	13,800,176	82.46
1892	12,059,351	15,488,748	77.85
1896	13,923,102	17,241,642	80.75
1900	13,959,653	18,272,264	76.39
1904	13,510,648	19,864,495	68.00
1908	14,888,442	21,598,493	68.93
1912	15,036,542	24,276,236	61.95
1916	18,544,579	28,484,046	65.10
1920	26,786,758	51,156,684	52.36

Incidentally, this table shows that even the excitement of the first opportunity to vote was not adequate to bring the women to the polls, their showing being even worse than that of the males. The vote in state and local elections, and in congressional elections in "off years" is far less than this. The popular vote in direct primaries which select the candidates for election has proved so small as to make the whole

scheme of primaries, once a favorite reform fad of democrats like Governor Hughes, a travesty. Great public issues and policies no more call forth an eager populace than do the personal candidates for election. Those elections in which important issues are also submitted to the people in the form of the referendum do not seem to evoke any more enthusiastic response than the election of officials. In fact, a referendum by itself tends to elicit much less interest than an election.

To a considerable extent this lack of interest in exercising the right of suffrage is due to the large-scale and complicated nature of contemporary politics. This has destroyed that sense of immediate personal interest in elections and that curiosity about candidates which were characteristic of the earlier type of rudimentary local politics. A sense of vagueness and futility has superseded a rather keen personal interest in policies that directly and visibly concerned the every-day life of the individual and in candidates who were the personal acquaintances of all or most of the voters. Undoubtedly another source of political indifference is the cynicism generated by modern partisan politics and the accompanying corruption and incompetence. This creates the impression that it makes little or no difference in any event as to which party or policy prevails. It might also be pointed out in passing that this apparent lack of vital differences between party methods and policies has become essentially true in American political life to-day and that this state of affairs offers a decisive refutation of the thesis that democratic government is bound to create parties with marked differences as to policy and procedure in government.

One of the most disconcerting aspects of the democratic debacle is that the people seem as indifferent and incompetent with respect to the so-called remedies for democratic failures as they are with regard to the processes of traditional democracy. It has often been held that the remedy for democracy is more democracy, namely, direct primaries,

the initiative and referendum, and the recall of judges or of judicial decisions. The unfortunate fact is that if the people could make use of such devices they would not need them. If they could develop the interest and intelligence essential to any effective exploitation of such a mechanism as the initiative and referendum, they would be able to govern without it. These "remedies" for democratic failures make the same demands upon attention and deliberation that are required for the success of conventional democratic processes. If the people can not muster enough interest and rationality to handle a general election, it can scarcely be imagined that they will do much in the way of successfully operating direct primaries or popular referendums. The experience with these devices of radical democracy in the last generation has shown that they fail as often as democracy of a more moderate type, and for the same reasons.

No less mythical in practise has been the democratic thesis of the capacity of the people for calm deliberation regarding the choice of candidates and for solemn scrutiny of public policies. In the first place, as we have just shown, less than half of the electorate, on the average, even shows enough interest in either candidates or policies to turn out at the polls. The others presumably neither deliberate nor scrutinize, and if they do so it is of no practical significance. It can hardly be held that even the actual voters do much deliberating. The methods of modern political parties during elections are not designed to advance calm reflection and penetrating insight into the real facts and issues involved, but are rather planned to stimulate emotion and passion and to paralyze thought. The psychopathology of the political party has been analyzed by Graham Wallas, Walter Lippmann, Robert Michels, Seba Eldridge and others in detail and with precision. The successful party is the one which develops the best technique for stirring the emotions of the masses to a favorable reaction rather than the one which presents the best candidates or platform.

Further, modern dynamic and social psychology has pulverized the old Benthamite felicific calculus and the rationalistic type of political psychology which grew out of it. It has been amply proved that man is not a cool calculating entity invariably choosing that line of conduct which he believes is sure to bring him a maximum of benefit and a minimum of discomfort, but is rather a creature dominated by such irrational factors as tradition, custom, convention, habit and the passions of the mob. These latter irrational influences are particularly present and potent in political campaigns. One's political preferences are determined chiefly by those accidents of birth which produce automatically a special type of political conditioning partaking of the character of the partisan affiliations of the parents. Most of us are "biological" Democrats or Republicans. To this conventional or customary background are added the emotion-provoking antics of those who plan and execute elections so as to conduct them on the psychic level of the mob. There is, therefore, little opportunity for any calm deliberation or careful scrutiny, or for the exercise of that shrewd insight into the qualities of candidates which was believed to be the particular attribute of the common people. The following description by Mr. George Jean Nathan of the manner of manipulating the political affections and of securing the vote of the typical American democrat would be splittingly funny were it not so precise a description of the considerations which dominate the democratic plebiscites and lead to the choice of our "public servants".⁷

Consider, for example, the means whereby he is readily brought to an admiration of whichever politician desires his esteem. Privy to the secrets of his emotional gullibility, the politician who wishes to woo his good-will sets about securing it in the following rubber-stamp manner: first, by having his photograph taken with his wife; second, by having his photograph taken with his wife and children; third, by hav-

⁷ G. J. Nathan, *The Land of the Pilgrims' Pride*, pp. 65-68.

ing his photograph taken with his old mother; fourth—and best, if possible—by having his photograph taken with one or both of his grandparents, a view which is invincible in convincing the American that the fellow, no matter whether his grandparents were horse-thieves, comes of solid stock; fifth, by getting his name on the boards of charitable organizations, even though he never once shows up at board meetings; sixth, by patting newsboys genially on the head in public places, thus attesting his humanness and democratic nature; seventh, by wearing clothes of a not too recent cut, and so indicating that he is one of the plain people; eighth, by pitching his voice an octave lower than his natural, thus giving himself the necessary he-man aspect; ninth, by never making a speech on any occasion save the Fourth of July or a fraternal organization conclave without much profound frowning; tenth, by alluding on every possible public occasion to the humbleness of the folk from which he sprang; eleventh, by mopping his brow as much as possible when facing his audience, by way of subtly flattering inference that he is hard put to it to convince so august assemblage of minds; twelfth, by approaching a movie news-reel camera in a slightly hesitating and diffident manner, as if he did not deem himself worthy of so great an honor; thirteenth, by wearing a silk hat only at Easter; fourteenth, by affecting a deep interest in baseball; fifteenth, by never smoking cigarettes in a holder, an act which would bring him to be viewed as a fancy fellow and one to be looked on with certain misgivings; sixteenth, by wearing a collar that doesn't fit him and which thus somewhat occultly persuades the American to regard him as a man so busy with important concerns that he has no time for such trivial details; seventeenth, if the owner of an automobile, by having one of a not too expensive or fashionable make and by making sure that it is of no color other than black; eighteenth, if a college man, by attending more laboringmen's balls and picnics than would otherwise be necessary; nineteenth, by never failing to have Thanksgiving dinner with his family; and twentieth, by denouncing his opponent before election day as being everything from a rat to a skunk, and after election day, whether he is elected or defeated, by admitting generously that, after all, his opponent is a very fine fellow indeed.

The argument that democracy is vindicated, if on no other grounds, by the special capacity of the masses for moral judgments and support of great idealistic causes, is easily seen to be wholly specious. In the first place, we now realize that there can be nothing really "moral" which is not scientifically sound, and the populace has neither the information nor the intelligence to ascertain what is scientifically valid in regard to social situations. The only way in which the public can be useful in moral questions is through the development of popular trust in the judgment of trained and informed leaders. When the masses come to be able to form their judgments as to the use of alcohol on the basis of the researches of a Raymond Pearl rather than through the rhetoric of Wayne B. Wheeler and when they follow Havelock Ellis rather than Anthony Comstock and John S. Sumner in regard to sexual truths, then we shall be on our way toward a real solution of our social and moral problems. Then, most of the great moral crusades have not had a popular origin, but have been the result of arousing support for movements begun by some educated and intellectually aristocratic reformer. The populace can, indeed, be trusted to demand sumptuary legislation based upon class envy, as Mr. Mencken has so clearly shown, but such action should not be confused with true social morality and human justice. Most of the so-called moral movements of the last century have been associated with the elevation of the masses, and it is not surprising that the people have at times fallen in line with programs designed to advance their class interests. The people may supply fanatics, but no true reformers.

Progress in political science and social economics has made it clear enough that the old theory of political determinism is hopelessly superficial and inadequate. The laws of social causation which have now been established have proved that political institutions are derivative and not primary. A political system does not create a social order, but a definite type of social system in time produces the ap-

propriate type of political system, making due allowance for divergences in detail caused by differences of historical background and variations in culture. Hence, democracy can not be relied upon to mold a social system satisfactory to its requirements, but can only develop where conditions are suitable. For reasons which we have outlined above, it would scarcely seem that democracy is suited to the exacting requirements of our complicated industrial civilization. Indeed, some of our best writers on contemporary society are coming to doubt the adequacy or permanence of political institutions as a mode of social control and are demanding a new form of social control based upon and conforming to the economic and social realities of the present age. W. K. Wallace's *Passing of Politics* is a representative example of a conservative advocacy of such a plan, while the syndicalists represent the radical advocacy of this proposal. Again, the real sequential or causal relation of society and government suggests the inadequacy of political democracy by itself. The vote is of little value if we can not eat. Any real democracy would have to include social democracy as well as universal suffrage.

Likewise, the nationalistic obsession has proved a dangerous setting for democracy in world society. Democracy can not well ignore international conditions. A great war may come to any country in an age of "international anarchy" and destroy the political institutions which have been evolving and approaching perfection for many years. The temporary destruction of both political and social democracy in England by the World War is a striking case in point. It was frequently alleged during the War by protagonists of the Entente that democracy would put an end to war, but we now know that the leaders of democratic France accepted war with more enthusiasm in 1914 than did the rulers of autocratic Germany. Again, the crisis of 1914 proved how, even in a democracy like France or England, bellicose leaders can plunge a pacific population into the abyss. Georges

Demartial's *Comment on Mobilisa les Consciences* presents a magnificent clinical picture of this futility of democracy as a safeguard against war. Though democracy can not by itself cure war, the success of the World War in disposing of many of those symptoms of democracy which previously existed proved that war cures democracy. The World War was probably the greatest blow to democracy since the dismal failure of the revolutions of 1848. There is at present what amounts to a practical dictatorship by a person or a committee in Italy, Hungary, Russia, Spain, Portugal, Poland, Greece, Roumania, Bulgaria and Belgium. In the United States there is as yet no need for Fascism for we have the Supreme Court to void social legislation and hold in check any trend toward political or economic radicalism. A country with the court record as to reckless and relentless destruction of measures looking toward social progress possessed by the United States in the history of the Supreme Court since 1850 has little ground for casting slurs at Signor Mussolini! One could almost defy divine ingenuity to devise a more perfect system of protecting the vested interests than the constitutional right of the Supreme Court to void popular legislation, taken in conjunction with the wide latitude for the exercise of this right conferred by the "due-process" clause of the Fourteenth Amendment. The protagonists and technicians of autocracy now have at their disposal ample evidence that when liberalism becomes threatening the movement can be easily checked by pulling off another war, and there is little doubt that they will speedily make the effort, especially if the vested interests of plutocracy and autocracy stand to gain extensively in a material way by war. Therefore, one may safely say that democracy could only safely coexist with a pacific world order and adequate world organization against war. It may well be that democracy is not even equal to the exactions of a peaceful society, but there is no doubt of its incapacity in the face of the strains of war. To point to the efficiency of

the United States during the World War is no refutation of this position, because such efficiency as we exhibited was purchased by disproportionately greater sacrifices of democratic institutions and intellectual freedom. There was almost as little liberty in warring America under Mr. Wilson as there was in Tsarist Russia.

5. *The Outlook*

One of the most frequently exploited of the apologies for democracy is the allegation that it is unfair to say that democracy is a failure, since it has really never been tried. It is pointed out that, even though we have long enjoyed universal suffrage in the United States, yet the real power in economic life and government is concentrated in the hands of a few very wealthy individuals—that we have plutocracy and not democracy. The answer to this would seem to be that there could be no more effective and unanswerable proof of the futility and impossibility of conventional democracy than to point to the fact that we have had universal suffrage in the United States for almost a hundred years without realizing democracy. If we have not been able to establish democracy in this country in the past century, when conditions at large were better adapted to democracy than they are to-day or will be to-morrow, what hope is there that we shall be any closer to real democracy a hundred years hence? Especially when we are much less liberal and democratic to-day than we were in 1900!

It is the firm conviction of the writer, who was once an ardent sentimental democrat, that several hundred years hence the historians of political theory and institutions will describe democracy as the most interesting political fiction of the nineteenth century. It will be shown to have been something which, as originally understood, never did or never could exist. The conditions which promoted it and in conjunction with which it might have existed—a simple

agrarian society and a stable civilization—were already passing away when the democratic dogmas were first being fashioned. Before popular government was realized those social conditions which were compatible with popular government had disappeared. Likewise, the theoretical assumptions upon which democracy was launched—the equality of man, high potential interest in public affairs on the part of the masses, and penetrating rationality of the populace in political matters—have been punctured by the development of science and the test of experience. Hence, the political problem of the future is not to attempt to vindicate or perfect democracy but to seek some form of social control more tenable in theory and more adapted in practise to the requirements of the contemporary age.

There is, then, no inherent reason why one should view with cosmic despair the debacle of the democratic dogma, any more than one should lament the passing of absolute monarchy or feudal autocracy. There was once as much dismay among autocrats concerning the decay of absolutism as we now find in the writings of Bryce, Lippmann and other even more disillusioned friends of democracy. The vital question before us is not one of retaining democracy but rather one of finding some kind of government which will work. It has been said by some that it is manifestly impossible to find another successful form of government. They contend that the exponents of democracy may at least seek comfort in the thought that all other forms of government have proved to be worse. This implies, however, a retrospective attitude. The "worse" forms of government are those of the past. We have no means of knowing how greatly we may improve upon those earlier methods and devices, all of which were worked out in a crude manner on the basis of limited experience and very little scientific knowledge. There is no reason why we should not, in the political field, risk some original and inventive endeavor, based upon the experience and social changes of the last

century and the scientific knowledge concerning man and society which has been accumulated during this period.

The problem is really one of getting efficient and socially-minded leaders into positions of authority and responsibility. We must have the efficiency, training and professional political spirit of the old Prussian bureaucracy, divested of its class spirit, its arrogance and oppressiveness. Intelligence tests for weighing voting power; intelligence tests, information tests, special professional training, and successful experience for political office-holding and promotions; and some sort of combination of functional and proportional representation to give justice and rationale to representative government would seem to be suggestions which are worthy of consideration and might be woven into the structure of the new state. More power and vitality in local government units would doubtless help much. The elimination of sump-tuary legislation and really unnecessary state interference would relieve the strains upon administration and decrease the burdens of political control. Finally, one must at least accustom himself to considering the gradual disappearance of what might be called political institutions, as apart from the natural and functional social and economic groupings, and must envisage the possibility of the development of a system of social control executed by the socio-economic organizations. It may well be that we shall pass on to highly novel and much more rational and effective types of social control than we now make use of and we may in the future look back upon the nineteenth-century democratic illusion much as a highly trained contemporary chemist views the aspirations of the alchemists.

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CHAPTER XI

NATIONALISM, IMPERIALISM, WAR AND PEACE

I. THE COMPLETION OF THE NATIONAL-STATE SYSTEM

1. *The Nation Supplants the Neighborhood*

ALONG with constitutionalism and democracy, another leading political effect of the Industrial Revolution was the perfection of the national-state system. Prior to 1750 the masses were usually illiterate and knew little of national politics or achievements. Even great national wars attracted little popular attention beyond the fact that individuals from certain neighborhoods might be known to be away at war. The armies were chiefly hired professional armies, and the masses were not disturbed, except when the territory was actually invaded. There was some primitive and mystical loyalty to the dynasty and the reigning monarch, but little or nothing of modern popular patriotism or love of country. The outlook was primarily local and provincial, rather than national.

While there had been some development of English national sentiment as a result of the revolutionary and colonial wars of the seventeenth and eighteenth centuries, the first important contributions to the popularization of national sentiment were a product of the American and French Revolutions. While there were notable differences of American opinion over the desirability of the American Revolution, yet a considerable degree of national unity and common pride was generated as a result of the victorious conclusion of this struggle. The national sentiment was, when skilfully led by men like Hamilton, Washington and Madison, suffi-

cient to form the foundation of the American federal union. Even more significant in this way was the enthusiasm created among the French by the victories of the French Revolutionists and Napoleon. In spite of the shibboleths of liberty, fraternity and equality, the sentiment of nationality was more effectively forwarded by the French Revolution. Not only did it influence the French themselves, as a direct result of the military success of the French generals, but it also appeared in other states where the French carried their system, and where, as in the case of Prussia and Spain, national sentiment was aroused in order to defeat or drive out the French. However, such temporary developments of national sentiment and patriotism as were produced by the American and French Revolutions could not be lasting in their effects. They were the product of abnormal and temporary stimulation. What was needed to create a permanent and ever-alive patriotic sentiment was the mechanism for the nation-wide communication of information, which was a product of certain technical aspects of the Industrial Revolution.

Down to the period of the introduction of the modern printing-press, the provision of the newspaper, and the development of the telephone, telegraph, cable and other machinery for the dissemination of information, the masses were essentially illiterate, ignorant and provincial. The range of their outlook was limited chiefly to the neighborhood. A person from another part of the state was as much a stranger as a visitor from a foreign country, and all strangers were looked upon as potential bearers of evil. The citizens knew little or nothing about national policies and even less about the events which were taking place outside of their own state.

The Industrial Revolution changed all of this. The telegraph and electric cable enabled news to be sent from the most remote parts of the earth to the newspaper offices of a distant country with amazing rapidity. The modern printing-press, the daily paper and the facility for the rapid cir-

culatation and distribution of these papers have made it possible for a citizen to read of events which occur in Siberia within three or four hours after the time when they take place. Due to the standardization of news, citizens receive a common stimulation with respect to both domestic and foreign news. A million may read simultaneously of an insult to some consul on some distant Pacific Island, and be speedily and synchronously inflamed at such an indignity and insult to their national honor. Designing statesmen and politicians can readily play upon the pride and weaknesses of the citizens through their public statements and discourses, which are well-nigh immediately brought to the attention of all the citizens. The development of free public education has made it possible for an ever larger circle of individuals to participate in this dissemination of information by means of the daily paper. In this way, modern technology has forwarded the nationalization of the primitive herd instinct and of the narrowness and provincialism which characterized Europe on the eve of the Industrial Revolution. The radio offers almost unlimited possibilities in the way of promoting national solidarity if used unscrupulously by the government or powerful classes in society.

The same narrow outlook which dominated the primitive peasant in 1750 with respect to his neighborhood now characterizes the majority of citizens in their reaction to the national industrial state. They have transferred to the nation that same primitive suspicion and provincialism which characterized their attitude toward the neighborhood and adjacent territory a century and a half ago. In this process, patriotism and chauvinism have become much more dangerous than they were in the early neighborhood, because modern national states are possessed of far greater potency for harm than the local community of the eighteenth century. Of course, it should be pointed out that the Industrial Revolution has introduced important counter-forces and influences, designed to stimulate internationalism, and that, with

the growth of world trade, international economic interdependence and world finance, many phases of economic life have become more and more thoroughly international. But the World War, which broke out in 1914, was a definite proof that the national manifestations of the herd spirit were still far stronger than the forces which had gradually built up an international outlook and procedure.

2. The Nationalistic Complex

A few of the leading factors in the nationalistic complex may be briefly described. In the first place, we have the psychological factor, namely, the enduring herd and tribal conditioning which was gradually transferred to the local community and has now been carried still further to the modern national state. The average citizen of the national industrial state of to-day is almost as much dominated by crude emotions when the matter of national pride is involved as was the primitive savage when the safety and interests of his tribal group seemed to be threatened. In times of crises the modern man seems little more able than the primitive savage to submit his differences to amiable and rational considerations and arbitration. The relations between states in all matters vitally concerning the collective entity are nearly as much on an emotional plane to-day as were the relations of tribal groups ten thousand years ago. Thus far, man has thought and acted primarily in terms of a specific group, either a tribe, a community or a state. Thinking in international terms is an extreme novelty which has had, as yet, singularly little influence and practical results.

Along with this all-important psychological factor should be noted the cultural one, namely the tendency of a people to regard their cultural institutions as superior to those of any neighboring group. The language, literature, historic achievements, art, ceremonial, modes of life and attitudes of a state are assumed by its citizens to be the perfect type of

achievement in all of these respects and invariably superior to the comparable products of neighboring political entities. This tends to make the citizens of one state contemptuous of the cultural products of another state, and generates a very narrow and provincial cultural outlook, with very serious consequences as far as arrogance of national view-point is concerned.

Among the more important factors in the political impulse to nationalism may be mentioned: (1) national pride with respect to the territorial area of a state and the resulting impulse to extend it; (2) the feeling that vital questions between states, particularly those involving the so-called national honor, can not well be submitted to arbitration without a loss of national self-respect; and (3) the general worship of the military cult. This latter force has been, perhaps, the most sinister one in the whole nationalistic complex. In part, the worship of the military cult has been a cultural, as well as a political, factor, for a large amount of the enthusiasm for armament and war in modern times has been generated as a result of the peculiar notions of history inculcated in the nineteenth century. Peoples have been taught to believe that the most glorious events in their past were those connected with war. The great national heroes have not been, in most cases, the philosophers, scientists or great literary figures, but rather the generals and diplomats. This attitude has, perhaps, been the most powerful factor in the political psychology of modern nationalism. The effect of all this is to be seen in the vast armaments which weighed down the European states with enormous burdens of taxation in the last forty years, and ultimately brought on in 1914 the worst calamity in the history of European society.

To the psychological, cultural and political factors in modern nationalism must be added the economic. Many writers put this first in importance. Among the economic impulses to nationalism, perhaps the most significant has been the struggle for markets and the international competition with

regard to the sale of particular products. This has aroused a vast amount of national animosity. Closely related to this matter of competition have been the protective tariff arrangements in the last half-century, which have allowed nations to carry on economic warfare at a time of ostensible political peace. Particularly has this been the case with European states, which have adopted the so-called discriminatory and differential tariffs, with the aim of providing some method of economic coercion of neighboring states through their maximum and minimum schedules.

The European tariff system possesses this element which is not so prominent in the tariff system of the United States, namely, the tendency to use the tariff schedule as a mode of economic warfare and pressure during times of political peace. In the United States, the tariff is chiefly a commercial and financial affair. In Europe, it is used by one state to coerce its neighbors into favorable economic relations. Most European tariff bills provide maximum and minimum rates, with a graduation of schedules between the maximum and minimum. In case a state will grant very favorable economic concessions, the minimum rates are applied in commercial relations with that particular state. If favorable concessions can not be extracted, then the maximum rates are applied. This European system of differential tariffs has been a prime cause of international friction and hatreds. With the possible exception of the struggle for markets in colonies oversea, it has been the most significant economic factor in producing the belligerent spirit in contemporary Europe and in bringing on the World War. While economic factors have actually produced the basis for a vast amount of internationalism in trade, communication and finance, yet it has been the narrow nationalistic aspects of economic impulses and aspirations which have been among the most effective forces in nationalizing the Western World in the last two generations.

Again, the new economic order has been accompanied by

a rapid increase of population, and, in many instances, states have felt it desirable to extend their boundaries rather than see their citizens migrate to other states. There has thus far been plenty of relatively vacant territory which might have been settled by emigrants, had it not been for the patriotic complex which led the various governments to desire to have their migrating nationals retain their citizenship. Hence, they sought colonies for the settlement of their surplus population. After 1870 the areas available for colonization had almost disappeared and the effort to execute colonial enterprise was bound to bring on international friction. Therefore, it was the psychological factor of patriotism more than the social element of population growth which helped on international rivalry and war down to 1914. Another social phase of the nationalistic complex, again largely psychological in its basis, has been the dogma of race superiority, particularly the superiority of the white race or some branch of the white race. Though supported by little scientific evidence, these expressions of race arrogance have served to excite hatred, and in some cases have led to acts of violence and aggression, especially in the form of imperialistic ventures under the guise of the "white man's burden."

3. *The Triumph of Nationalism*

On the basis of these various forces creating nationalistic aspirations many concrete achievements in the way of national independence and unification have been worked out in the nineteenth and twentieth centuries. The United States overcame the decentralization of the period of the Articles of Confederation and established a strong national state by the time of Andrew Jackson. This first achievement was to be threatened, however, by the rise of slavery and sectionalism, and not until the period of the Civil War and Reconstruction was it definitely assured that the United States would remain a strongly centralized national

state. After two centuries of futile aspirations, the German Empire was finally united as a result of the forceful policy of Bismarck in 1866 and 1871. Italy, through the efforts of Count Cavour, was transformed from the "geographical expression" of 1815 into a strongly unified state by 1870. In southeastern Europe, national independence was achieved, in part, at least, by Greece and the Balkan states, beginning with the Greek Revolution of 1820. Before the close of the nineteenth century not only Greece, but also Roumania, Bulgaria, Serbia and Montenegro had established themselves as essentially independent states on the ruins of the old Turkish Empire in Europe.

In spite of these achievements, a number of people still remained in a position of national and political subordination and repression at the outbreak of the World War in 1914. Among these were the Poles, Finns and Lithuanians, the Czecho-Slovaks of Bohemia, the Jugo-Slavs, and the Roumanians of Transylvania. As a result of the defeat of the Central Powers, the Treaties of Versailles, St. Germain and Trianon provided for the national independence of all these repressed peoples. In the place of eighteen national states in 1914 thirty had come into existence by 1920. While it is unquestionable that the independence of these smaller states could not be denied, in the light of the general adherence of those in charge of making the peace to the principles of national self-determination, there is no doubt that the creation of a large number of smaller independent states in central Europe marks a backward, rather than a progressive step in political history, unless some adequate method of international control is provided. The greater the number of independent states in any area, the more probability that we shall have international friction and warfare. In other words, the very realization on such a large scale of aspirations toward national independence has created a greater need than ever for some satisfactory type of international organization and government. Again, the post-war peace

treaties overdid their work and created new groups of repressed peoples, particularly notorious being the partition of Hungary, the award of the South Tyrol to Italy, the creation of the Polish Corridor and the dismemberment of Bulgaria.

Political relations have, however, tended normally to be but the reflection of the deeper economic conditions and forces, and, just as economic unity has always proved the most effective impulse toward political harmony, so economic separatism and suspicion will threaten the dissolution of any political unity on a world scale. Therefore, it seems clear that any permanent and effective international political or juridical organization must rest upon the basis of economic trust and fair dealing. This phase of the problem has been forcibly set forth by Professor Frank H. Hankins:¹

The great stumbling block to internationalism is today the outworn tradition of Mercantilism. This familiar doctrine holds that the nation is the trading unit, that consequently it profits most when it sells much and buys little, and that consequently each nation ought to shut itself up behind trade barriers and, like a hermit empire, prevent the intrusion of the cheap goods of other nations. With the overthrow of the dynastic state nothing now seems to have so firm a hold in popular tradition and hence so close a connection to the galvanic batteries of patriotism as this hoary tradition. . . . If we are to have a lasting peace, then this illusion must also pass into the limbo of outworn creeds; and the peoples of the earth, freed from local fears under the protecting security of a superstate, can become rivals in exploiting the earth rather than each other and mutually enrich each other by a free exchange of their products. Far more certain than the proposed super-alliance of nations as a guarantee of future peace as well as prosperity among men would be a Zollverein of all industrial nations. Likewise the most prolific source of international jealousy and suspicion in the future seems likely to be trade discriminations, differential tariffs, unfair control and distribution of raw materials and shipping facilities, and other efforts to maintain the economically self-sufficient national state.

¹ F. H. Hankins, *Patriotism and Peace*, Clark University, 1919.

The immediate problem is the formation of a league of nations as the means of allaying fear. The problem of the future is the removal of trade barriers and the establishment of an international economic organization of the world. Only thus will the superrational sanction of nationalistic patriotism be transmuted into a supreme loyalty to humanity.

When the necessary cultural, political and economic prerequisites of international amity have been secured, then, and then only, can one hope for a just and effective world order, for, as Professor Giddings has well said: "A league to enforce peace must be composed of nations that will both keep faith with one another and practically act in cooperation with one another against the law-breaker. Practically these requirements can be met, and will be met, only if the component nations of the league share a common civilization and hold a common attitude toward questions of right, liberty, law and policy."

II. NATIONAL IMPERIALISM AND THE LATEST STAGE OF EUROPEAN EXPANSION

1. *The Historical Background*

One of the major political results of the Industrial Revolution was national imperialism, or the second great stage in the expansion of Europe overseas with the resulting struggle for colonies and markets. We have already indicated the way in which the Industrial Revolution had affected the European attitudes toward expansion and colonialism in the nineteenth and twentieth centuries. The first result was temporarily to discourage expansion overseas and the growth of imperial domains, but by the time the Industrial Revolution had affected the leading European states, its results served to generate an even more eager struggle for the remaining unoccupied parts of the earth than had character-

ized the early period of colonial expansion in the sixteenth and seventeenth centuries.

The old colonial system was built up originally by the dynastic national states at a time when they were dominated by royal absolutism, narrow chauvinism and an extremely archaic and fallacious type of economic and commercial theory. It was constructed as much on the basis of a desire to promote an increase of wealth in royal hands as to make possible the maximum expansion of national trade. It was a narrow political and class policy rather than a broad democratic or socialized procedure. Therefore, it naturally aroused the animosity of the merchant classes at home and in the colonies who desired a maximum degree of freedom, activity and business. Further, the attempt to enforce this unpopular policy proved expensive, especially in the face of ever-increasing colonial resistance. Finally, the intellectual currents promoted by the expansion of Europe tended toward an opposition to Mercantilism. The eulogy of the "natural order," and the growing belief that social and economic processes functioned most perfectly when in complete conformity with those natural laws which Newton and others had held to govern the physical universe, combined to discredit so artificial a system as the extensive legislative restrictions on free competition which were embodied in the Mercantilistic régime. In this way social, economic and political theory was being reshaped to reinforce the commercial and administrative objections to the old colonial system.

At the same time that the American colonists were offering a successful resistance to British Mercantilism in practice, economic theorists were submitting a doctrinal attack upon the foundations of this system. The leaders of the movement were the French physiocrats and their defender, Turgot; and the English classical economists, with their followers on the Continent. This group of so-called "economic liberals" assumed that economic prosperity and social welfare could best be promoted by securing as far as possible

the conformity of economic processes and institutions to that supposedly beneficent "natural order" which was believed to pervade and govern the universe. This conformity would be realized with greatest assurance through ushering an era of free competition into the economic realm. To do this it would be necessary to repeal the restrictive legislation which had grown up as the basis and essence of Mercantilism. Therefore, the practical program of the economic liberals called for the abolition of the restrictions on the perfect freedom of the development of industry and trade.

The doctrines of the theorists were warmly espoused by the new capitalistic class which was strengthened by the Industrial Revolution, as well as by all others likely to benefit by a greater degree of industrial and commercial freedom. In England, Huskisson, and later Cobden and Bright, led in the attack upon the old navigation and corn laws, and by 1860 this group had succeeded in bringing free trade to England and in discrediting to a very considerable degree the idea of the advantages of an aggressive imperial policy. The "cosmopolitan dream" of Cobden embodied the acceptance of complete freedom of trade, anti-imperialism and international arbitration. Cobden worked vigorously to obstruct any further development of imperialism and envisaged the disintegration of the British Empire. In France the work of Cobden in applying these new theories in the realm of statesmanship was carried on by Guizot, who opposed French intervention in the Levant, and by Bastiat and Saint-Beuve who strove with some success to secure the radical downward revision of the French tariff system. This was realized by the Cobden Treaty of 1860 and similar subsequent agreements with other states. In Prussia, Maassen, Bülow, Eichhorn and von Motz carried through the liberal trade policy embodied in the *Zollverein* of 1818-1867. Every important European state was affected to some extent by this reaction against trade restrictions and colonial expansion.

But at the very time when free trade and anti-imperialism were receiving the largest degree of practical application great historic changes were beginning to work out their effects in a manner designed to wreck the program of the economic liberals. Nationalism, intensified by the French Revolution and subsequent political and economic events, made for the defeat of cosmopolitanism, while the increased productivity made possible by the Industrial Revolution stimulated that search for additional markets in backward districts which doomed the impulses supporting anti-imperialism. With the French intervention in Tunis and other north African territory, the English purchase of the Suez Canal stock, and the reaction toward higher tariff schedules which was initiated by the German act of 1879 the day of economic liberalism was over and there began that commercial warfare and that struggle for colonial dominion which, with other supplementary forces, led straight to the European War of 1914.

As a movement modern imperialism has varied greatly, extending all the way from simply a dominating control over the commerce of a given area to complete political absorption. Perhaps the most conspicuous phase of modern imperialism has been the great swiftness of this recent European expansion and occupation of oversea territory. More territory has been actually procured for European occupation of one sort or another within fifty years than was occupied in the three centuries of the old colonial movement. In 1800 about four-fifths of the land area of the world had not been opened to civilized man through exploration, and as late as 1870 more than half of the habitable surface of the earth had not been seriously touched by Europeans. By the beginning of the twentieth century the whole planet outside of the extreme polar regions had been traversed by the white man and its resources and potentialities for exploitation had been catalogued. Africa had been explored and partitioned. Oceania and Australasia had been occupied, and the commer-

cial hegemony of Europe and America had been established in Asia and Latin America.

2. *The Motives of Imperialism*

The forces or causes lying back of this expansive movement are conventionally classified as economic, political, social, religious and psychological. The economic causes of expansion grew directly out of the Industrial Revolution. While this movement had affected England, France and the United States at a somewhat earlier period, the great era of industrial development in Germany and the United States came in the years following 1860. This new industry, carried on by mechanical processes under the factory system, gave rise to an unprecedented increase in productivity and to an enormous expansion of capital available for investment. At the same time, the vast improvements in the methods of land and water transportation made possible the growth of world trade on a scale which exceeded anything before known, because of cheap transportation, the rapidity with which shipments could be made and the decreased proportion of losses in ocean shipments. All of these developments inevitably led to a scramble for foreign markets and to large-scale investment of capital in oversea areas. These markets and areas for investment were sought, when possible, in colonies carved out of backward and unoccupied tracts, and, when these were not available, in seats of older civilizations which had not yet passed into the modern industrial age.

The growth of modern nationalism stimulated and intensified the desire to secure and control colonial areas. Italy and Germany had just achieved national unification in 1870 and had developed an intense patriotic fervor which required an outlet in foreign expansion. France turned to foreign areas to secure compensation for the loss of Alsace-Lorraine. Russia, not satisfied with a vast area in Asiatic Siberia still awaiting exploitation and development, turned southward

to seize more territory in Asia. England had long staked her future on supremacy as a commercial and colonizing nation. Belgium supplemented her tiny European area by vast holdings in Central Africa. Even the United States, before the close of the nineteenth century, had occupied all the available free land within its boundaries and had turned to the Spanish-American areas for a new region of investment and exploitation. This process naturally produced as a sort of psychic compensation and justification the notion of the "civilizing mission" or the white man's burden.

Then, there was a strong socio-biological motive which combined with the political impulses to favor expansion. For some set of causes not yet well understood, but centering about modern industrialism and the growth of medical science, the population of Europe increased from about 175,000,000 to over 450,000,000 between 1750 and 1915. This led in many countries to a real pressure of the population on the means of subsistence, and emigration was stimulated if not necessitated. It was natural that the mother country should desire to retain a political control over her emigrants and this could be achieved only when they migrated to colonies.

Again, the religious motives for developing oversea areas had not declined, but had actually increased. To the Catholic missionaries, who had never ceased activity since the beginning of expansion, were added an ever-increasing number of Protestants. The appeal of the missionaries was further strengthened when it became possible for them to carry with them not only "the word which maketh wise unto salvation," but also modern industrial arts and the blessings of sanitary and medical science.

Finally, psychological impulses have served to extend the interests of Europe oversea. The love of adventure operated as ever, and the compelling power of scientific curiosity has not abated. Again, the social prestige usually attached to colonial service has acted as an incentive to the movement.

Further, the various psychological aspects of modern aggressive nationalism have been so utilized in the propaganda of skilful and unscrupulous imperialists as to effect a popular espousal of their program.

3. *What Has Imperialism Achieved?*

The newer movement of expansion has been a national affair rather than one of persons or privileged companies, and its chief field of operation has been the eastern hemisphere, rather than the Western World which was chiefly exploited in the earlier period of exploration and colonization. Africa, Oceania and Australasia have been forcibly colonized, while economic exploitation has been vigorously cultivated in Asia. This statement does not, however, ignore the extensive commercial exploitation of Latin America by European nations and the United States. The significance of this more recent period of expansion has been vividly described by Professor Shotwell: "Conquistadors, clad in khaki or glittering in helmetted display, have proclaimed to most of the savages of the globe that they belong henceforth to European nations. On the wharves of London there are goods from German workshops for the merchant adventurers of to-day to carry off to Bantus or Negritos. Piles of coal from Cardiff lie inside the coral reefs of Australasian islands, for the ships which come to break the silence of farther Hebrides than Wordsworth dreamed of. But for the historian there is more significance than romance in such events. The men whom Joseph Conrad and Kipling describe are responsible for the transformation of Africa and Asia. And that transformation in its turn is mainly responsible for those policies of imperial expansion, of commercial and colonial rivalries which underlie the causes of the present war." The effects of the new imperialism upon the political and diplomatic events and tendencies of the last half-century in Europe have been most profound. Scarcely a dominating

alliance or an armed conflict has existed which has not been more or less directly a result of imperialistic policies and ambitions. Moreover, these policies have very frequently determined even the characteristics and trends of domestic politics, as well as the destinies and careers of statesmen.

While it can not be doubted that much of the older policy of thoroughgoing exploitation has been carried over into the new imperialistic movement since 1870, it is certain that a somewhat higher moral level has prevailed in the activities of the colonizers. There has been at least some rhetorical, though often hypocritical, recognition of a moral obligation in the white man's burden and of the duty of elevating the cultural standards of the natives. There can be no question that even Karl Peters and the agents of Leopold of Belgium treated the natives of Africa with a greater degree of fairness and honesty than can be discerned in the relations of the Puritans of New England with the Indians of the district.

The broader significance of modern imperialism, as Professor Shepherd has suggested, may best be comprehended by viewing it in two different aspects, namely, the process of extending European civilization to lands oversea and the reaction of this expansion upon European culture itself. There can be no question that much the most important phase of the extension of European culture since 1870 has been the carrying of the material culture, especially the machine technology of Europe, throughout the world. In some cases it has not been widely adopted by the native populations, especially in the case of primitive tribes, but even in such areas it has been transplanted among the white settlers and has been the means of obtaining that supremacy of the white over the native black which has everywhere accompanied the coming of modern imperialism. The more conspicuous effects of the extension of the machine technology have been evident in the case of such older civilizations as those of Japan, China and India, where even a partial intro-

duction of the more advanced industrial methods has wrought in many sections a complete transformation of the external aspects of their civilization. Further, if it be true that economic processes tend ultimately to shape the other phases of civilization, then this economic transformation will some day bring about a general cultural revolution. The industrial changes in Asia which are now taking place will afford the most extensive social laboratory which could be imagined in which to test the validity of the Marxian theory of cultural development. Certainly the political and educational changes which have already been observable in Japan and China would indicate the coming of a general cultural readjustment. Along with the machine technology have gone the various phases of modern applied science, not only that which is directly related to industry, but also the sanitary and medical sciences which have done so much to save lives and reduce suffering.

In the political realm the extension of European institutions has been of a mixed character. In the government of backward peoples there has been little real political education or liberalism, except perhaps in such cases as the government of the Philippine Islands. In most instances it has meant a superimposition of an autocratic white bureaucracy which has been oppressive, even if more efficient than the native governments. On the other hand, there can be no doubt that the imitation of Western political theories and institutions by such states as China and Japan will be conducive to a greater degree of liberty and political efficiency than would ever have been possible under the old régime. In addition to the earlier policies of subjection or partial autonomy, which were typical of the colonial administration in the old colonial movement, three other policies have been developed in the more recent era: (1) complete autonomy, as in the case of the British self-governing colonies; (2) assimilation, or adaptation to Western culture, practised, for example, by France in northern Africa; and

(3) association, in which native customs are respected and the native culture allowed to develop along natural lines, though affected by the introduction of new industrial methods and subject to a general oversight of Europeans, cases in point being India, Egypt and Zanzibar.

In the matter of the extension of social customs so little has been accomplished that it would be difficult to generalize. In most cases the European governments have found it best to interfere as little as possible with native social customs, except in the case of what is obviously both cruel and useless. The abolition of infanticide, the suttee and the more painful and repulsive religious rites of the natives are definite examples of progress due to the contact with European customs. Much has been done by missionaries in the attempt to improve the sex mores of the natives and the Orientals, but as to how much positive progress is involved in the introduction of the Puritan "impurity-complex" among oversea populations is a question upon which students of comparative ethics and modern medical psychology have differed with the missionaries.

In offering an estimate of the contributions of missionary enterprise, so closely associated with the expansion of Europe, to the progress of civilization, a person's judgment would necessarily be tempered by his attitude toward the validity of the orthodox Christian doctrines. If he accepted the orthodox contentions, then the salvation from the eternal tortures of hell of the souls of the millions who have been converted would in itself alone have justified the expansion movement. On the other hand, if a person takes the attitude of contemporary critical scholarship and natural science and rejects the belief in a literal hell and in the unique qualities of Christianity, then missionary enterprise has to be judged according to whether the ideas and practises which Christians have introduced oversea are more suitable for the native population than those displaced. From this angle, the praise accorded to the results of Christian missions

would need to be stated in a much more discriminating and qualified fashion. While one could scarcely question the positive value of the introduction of Western medical science and some phases of Western technology, there is little doubt that in many instances the native institutions were better adapted to serving the local needs than the Western practises which the missionaries have brought in. Still further, if missionary activity is to be judged primarily on the ground of its contributions to secular progress, then it is a valid question as to whether such work could not be carried on more competently by secular agents. For example, is not the extension of medical work to the Orient by the Rockefeller Institute under the control of trained medical specialists to be preferred to the older medical missions? Then one can scarcely avoid mentioning the cases where missionaries have given asylum to "converted" bandits, criminals and agitators, to the great exasperation of the native governments. This was a leading cause of the Boxer revolt in China a quarter of a century ago. In short, it would seem that missionary enterprise was a logical by-product of orthodox Christianity, and, as orthodoxy is dissipated at home, there is little ground for spreading it oversea. And certainly we can not expect to take a sound body of morals abroad until science has provided such a code for us at home, something which is far from realized in Western civilization.

Lest one might be inclined to regard the European expansion as a wholly beneficent process it is necessary to call attention to certain detrimental effects of the contact of European peoples with those oversea. In economic matters Western industry and commerce, when introduced, has meant the development of modern capitalism with all of the misery which it has entailed in Western states. Further, there has been a general tendency to exploit native labor, not only in factories and mines, but also on rubber plantations and in agricultural activity, and to oust the natives from their lands when these possess valuable mineral de-

posits or other important products of commercial significance. Then, over against the saving of native lives by the introduction of modern medical and sanitary science, must be set the introduction or development of the use of alcoholic liquors and opium products which has brought about not only a great loss of life among natives, but also unspeakable misery and serious physical deterioration. Likewise, the ravages of venereal diseases have been introduced or increased by European contacts. In the field of religious endeavor one should not forget the frequent persecution of those natives who persevere in their older beliefs, the protection by missionaries of criminals guilty of atrocious crimes, as was often the case in China previous to the Boxer rebellion, and the frequent oppressive economic exploitation of natives, which was well exemplified in the conduct of agrarian operations by the Spanish friars of the Philippines.

The undoubted superior efficiency of European political control over colonies and the greater liberalism brought in through the Oriental imitation of Western constitutions have been paralleled by extreme autocracy and cruelty in colonial administration, especially in dealing with native revolts or crimes. Cases in point are the administration of Leopold in Belgian Congo, the German suppression of the Herero revolt in southwest Africa and the general administration of Karl Peters in German East Africa, the attempted extermination of the natives by the English settlers in Australia and New Zealand, British massacres in India, and the conduct of the American military forces in coercing some of the more warlike tribes in the Philippines. Nor has the social side of the contact between Europeans and natives been without unfortunate results. European habits have been introduced for native imitation, especially the use of alcoholics, and, at the same time that missionaries were trying to inculcate the sexual mores of Western monogamy, the white traders and others were systematically debauching the morals of the native women. While one can not question

the fact that the expansion of European civilization has brought a vast amount of material progress to the world at large, it seems equally true that the natives have lost more than they have gained by the process. If this be true, then the progress of modern imperialism can only be justified as Mr. Roosevelt upheld the conquest and expropriation of the American Indians, namely, on the ground that the "lower" civilizations must give way before the advance of the "higher."

It has generally been held that all the outstanding results of European expansion have been limited to the extension of Western culture to the peoples oversea, but there have been equally notable reactions produced upon European culture and institutions by this process of expansion. In the matter of the economic reaction of expansion upon Europe one of the most significant results has been the introduction of new commodities: extremely important articles of industry like rubber, petroleum and nitrate of soda; food products and beverages, such as tropical fruits, rice, cocoa and tea; and articles of ornament, as in the case of Chinese and Japanese ware and Indian ornamentation. The discovery of these new commodities and the stimulation of diversified industry oversea has promoted the development of a greatly extended international division of labor. Commercial mechanisms and financial institutions have been greatly altered as a result of the discoveries and the increased trade which accompanied the more recent phases of imperialism. While one should not neglect the significant beginnings of credit institutions and other devices to aid commerce in the old colonial movement, the mechanism of commerce in 1870 was extremely crude as compared with that which has developed in the last fifty years to expedite world trade. Again, the volume of money in circulation has been greatly increased, not only by the growth of business, but also by the discoveries of the precious metals in Australia, South Africa and other oversea territories. Finally, the growth of the world trade has stimu-

lated the increase of capitalism quite as much as capitalism has been promoted by trade.

The political reaction of imperialism upon Western society has been almost wholly unfortunate. The autocratic government of natives has tended to react in the way of weakening democratic institutions at home. Then, the burden of imperial administration has proved to be a severe drain upon national resources and has lessened the funds available for advanced social legislation. To this must be added the important part which modern imperialism has played in the recent development of armaments on both sea and land and in helping to produce the most expensive and deadly tragedy of history in the late World War. Perhaps, the only valuable contribution of imperialism in its political reaction upon Europe has been the training it has afforded in civil service and colonial administration.

In the field of natural science oversea expansion has been most potent in leading to revolutionary progress. It is conventionally supposed that scientific advances have come almost entirely from isolated work in European and American laboratories, but it would be easy to demonstrate that much of modern scientific progress has come from research in the realm of the greater laboratory of the scientific data of nature which has been opened to many by explorations oversea. In the field of geography there have been contributed, not only the great mass of new data and the perfection of cartography, but also the development of physical geography in all its phases since Alexander von Humboldt, and the analysis of the influence of the various physical environments of the earth upon man and social institutions in the writings of such students as Ritter, Peschel, Ratzel and Reclus. Astronomy has been perfected through the possibility of a wider and more accurate observation of the heavens after modern explorations had begun. In biology and zoology, not only has a vast amount of new data been brought together which has overthrown much of the systems of clas-

sification of Linnæus, Buffon and Cuvier, but also the observation of the divers species of plants and animals throughout different parts of the world enabled Darwin, Huxley and Wallace to formulate the greatest discovery of the nineteenth century in biological science, namely the theory of evolution. Both chemistry and the *materia medica* have been infinitely enriched by discoveries made during the process of oversea expansion. Much of value to medicine has been introduced as a result of contact with oversea areas, among such contributions being the introduction of quinine as a specific against malaria, and the suggestion of the revolutionary malaria treatment for syphilis and paresis.

Not less significant has been the reaction of oversea discoveries on social science. Without the data supplied by the observation of a great number of different cultures and peoples there could have been no such sciences as anthropology, ethnology, comparative philology, comparative religion, comparative jurisprudence, descriptive sociology, evolutionary politics and historical economics. Nor has the oversea expansion been without its significance in providing the knowledge and *motif* for important contributions to philosophy, literature, the drama and music, as will be evident from noting the influence of the "Sakuntala" of Kalidasa upon Herder, Goethe and the Romantic movement in European literature, of the "Geeta" upon modern European philosophy, and of the teachings of Manu upon the doctrines of Nietzsche. More recently the views of Ghandi have profoundly influenced Western thinkers. It is these little-recognized but all-important cultural contributions which have accompanied recent oversea expansion that must be set off against its detrimental effects when one attempts to assess the total significance of modern imperialism for European civilization. While there have been certain sporadic attempts to imitate Oriental social customs in the West, it must be admitted that the social reaction of expansion on Western civilization has been effective chiefly in an indirect

manner due to the effects upon social customs of the broader cultural changes which have been briefly summarized above.

III. NATIONALISM, IMPERIALISM AND THE WORLD WAR

If, in conclusion, one were to raise the question of the probable future of imperialism little can be said further than that it seems to be a creation of capitalism and *Machtpolitik*. It is not likely to decline as long as these forces and principles remain operative, and their abatement does not appear imminent. It would seem, however, that, except in the event of another world war, the imperialism of the future will have to be carried on primarily by economic rather than political means, as most of the formerly unoccupied areas of the earth have now been appropriated by the stronger powers.

It is difficult at present to analyze satisfactorily the causes of the late World War. It would seem, however, that the causes may be divided into two main classes: (1) those which arose out of European conditions, and (2) those which developed primarily as a result of expansion oversea, however much interaction there may have been between the two. The former may again be classified as social and economic, and political and diplomatic. Among the European economic and social causes might be listed the trade rivalry of England and Germany, and, in the case of England, Germany and Russia in particular, the "dangerous" development of political and economic radicalism, the progress of which it was hoped the war would check. The most important of the political and diplomatic causes in European conditions were: (1) the hatred between France and Germany which was created in the Napoleonic period, intensified by the Franco-Prussian War of 1870 and kept alive as the dominating thread in European diplomacy by the wiles of Déroulède and Delcassé; (2) the Austro-German-Russian rivalry over the Balkans from 1906 onward; (3) the Russian drive for the Straits leading out of the Black Sea; and (4) the German

plans for development in western Asia. All combined to create the bellicose psychological state which was the dominating factor among the immediate causes of the conflict.

It has been shown above that the forces leading to expansion oversea were of the most divers sort, political, social, economic, religious and psychological, and it will not be necessary to analyze them again at this point. The relations of the expansionist movement to the state of mind which brought on the war will be apparent from a bare summary of the international friction which it created. England and Germany clashed over territorial disputes in Africa and over the German attitude toward the British policy in dealing with the Boers; in Oceania concerning the Samoan and other islands; and in Asia Minor over the attempt of Germany to develop Mesopotamia and Asia Minor. England and Russia were led by jealousy over territory in the Near East into a bloody war in the middle of the century and nearly to another in 1878 and 1884; and mutual aggression in Afghanistan and Persia ended without war only through a parceling out of the territory between them. England and France, after earlier friction over northern Egypt, came near to war over the Fashoda Incident in 1898, and hostility was here averted solely by a redistribution of colonial possessions and ambitions. Germany and France threatened the peace of Europe twice over Morocco before the matter was even temporarily adjusted. The rivalry of Germany and Russia in Asia Minor was not wholly settled by the "Willy-Nicky" correspondence or the convention of 1911; while the conflict between *Mittel-Europa* and Pan-Slavic plans, and the mutual rivalry over Turkey stimulated the diplomatic crisis which precipitated the war. Germany and the United States clashed over the Samoan Islands and in regard to the American conquest of the Philippines. Italy broke her long friendship with France over the latter's annexation of Tunis and made war on Turkey to secure Tripolitania after being sharply held up in Abyssinia. Russia and Japan fought over

eastern Siberia and Manchuria. Finally, the "glory" of the war with Spain served the better to prepare the United States to enter upon the World War.

The eminent English economist, J. A. Hobson, has admirably summarized the combined effects of capitalism and nationalism in creating the state of mind, attitudes and policies which inevitably produced the World War, given the existing state of international relations and diplomatic methods:²

We have seen these two dominant forces emerging and moulding the course of actual events. Nationalism and capitalism in secret conjunction produced independent, armed and opposed powers within each country, claiming and wielding a paramountcy, political, social and economic, within the nation and working for further expansion outside. This competition of what may fairly be called capitalist states, evolving modern forms of militarism and protectionism, laid the powder trains. The dramatic antithesis of aggressive autocracies and pacific democracies in recent history is false, and the failure to discern this falsehood explains the great surprise. Nowhere had the condition of a pacific democracy been established. Everywhere an inflamed and aggrandizing nationalism had placed the growing powers of an absolute state (absolute alike in its demands upon its citizens and in its attitudes to other states) at the disposal of powerful oligarchies, directed in their operations mainly by clear-sighted business men, using the political machinery of their country for the furtherance of their private interests.

It might have been supposed that the states of the world would have profited to some degree by the lessons of the past sixty years as to the dangers of aggressive *Weltpolitik*, and while in the midst of the great conflict would have hesitated to lay plans for a continuance of the same policies that had done so much to bring on the tragedy, but there are no

² J. A. Hobson, "Why the War Came as a Surprise," in *Political Science Quarterly*, September, 1920.

indications that they had learned anything whatever from the history of the world since 1870. Germany planned, if victorious, to seize much of Africa and western Asia and to extend her possessions in Oceania and the Far East, as well as to expand her spheres of interest in South America. If the Allied plans for annexation were somewhat less extensive it was only because there was less German than Allied territory oversea to be occupied. The Allied powers, while publicly proclaiming their sincere devotion to pure idealism, early entered into secret and nefarious agreements as to the seizure of the German colonies, the conquest of western Asia, the Japanese occupation of Shantung and the partition of Turkey and Germany. The United States made no claim for territorial annexation, but proceeded to appropriate nearly a billion dollars' worth of German property in this country, an accession of much greater immediate value than the whole German colonial empire. The extra-European phases of the war were colored by attempts to execute these plans for annexation. Germany tried to stir up rebellion in the British colonies and ordered the Turks to invade Egypt. The Western powers invaded Turkey and sent an expedition into Mesopotamia. Japan seized the German possessions north of the equator in the Far East, while Australia and New Zealand took those below the line.

In few regards did the Peace Conference seriously interfere with the execution of the secret agreements made by the Allied powers as to the disposition of the spoil. The one progressive policy which has emerged from the war in regard to imperialism is the so-called *mandatory* principle for an international control of the colonial possessions taken from Germany. This is embodied in Article XXII of the Covenant of the League of Nations and provides for the administration of the former German colonies by the various Allied powers, subject to the supervision of the Council of the League and a special commission created to examine the annual reports upon administration which are to be submit-

ted by the states possessing the mandatory power. Theoretically this marks a very important advance in the way of international supervision of oversea administration, but it would be easy to be over-sanguine as to the probable beneficial results of this departure. The mandates are in the hands of the Allied states, and it is not probable that there will be any alertness and enthusiasm in mutual criticism of the administration. States that would acquiesce in the annexation of the German colonies and the despoiling of China can not be relied upon to have extremely tender consciences in the international relations of the future. The French conduct in Syria since the war has been, in the light of the cultural status of the native peoples, infinitely worse than anything of which Germany was guilty in East Africa before the war. Finally, the success of the whole scheme rests upon the continued and successful working of the League of Nations, something which at present is far from assured. As long as the fundamental causes of wars are allowed to persist unmitigated and unimpaired there is little probability that any formal machinery will insure perpetual peace. The problem, then, is the dual one of eliminating the causes of wars and evolving machinery to hold these in check until they can be suppressed.

IV. ELIMINATING THE BASIC CAUSES OF WAR

↙ The elimination of war is the most important subject which faces humanity to-day. In the "race between education and catastrophe" man needs all of his intelligence and resources in the task of solving our social problems within national boundaries. There is little hope that man will be able to cope successfully with the complexities of the modern age if his efforts are thwarted and destroyed by the periodic intervention of war, destruction and confusion. The most successful social policy and political system, which may represent generations of untiring effort, may be ruined in a few

years by the ravages of war. The contrast between Liberal England in 1913, socially, economically and politically, and Tory England of 1927 with its poverty and misery and its futile and impotent government is a most instructive example of the ruination wrought by war. There is little use of working for a better social order within national boundaries if such efforts are to be wiped out in a few months of useless carnage. Hence, the elimination of war is the first prerequisite to any hope of a decent world order and to any assurance of enduring civilization.

The only way to end war is to face squarely the causes of wars and to attempt to reduce or mitigate these as rapidly and thoroughly as possible. It is of little avail merely to attack one or another of the symptoms of the war system. The fundamental causes must be sought out and resolutely assailed. This statement should not be taken as an attitude unfriendly to the movement for the outlawry of war. To the present writer it appears that the attack upon the causes of wars should be paralleled by the movement for the outlawry of war. If the latter should succeed it would provide a short-cut to the objective to which all sane people aspire, while the more successful the achievements in the way of eliminating the causes of wars the more likely is the outlawry program to succeed. The important thing to emphasize here is the desirability of avoiding a single-track outlook and allowing any one panacea for ending war to usurp the field.

In considering the basic causes of wars it is highly essential to take a broad view of the question. One of the reasons why the former attacks upon war have proved inadequate is that enthusiastic pacifists have often tended to seize upon one or another cause of war, to the neglect of many others of equal or greater potency. The causes of wars may be summarized as: biological, psychological, social, economic, political and ethical. The biological causes of wars arise chiefly out of the nature of man which allows a pugnacious

as well as a pacific type of conditioning, according to his social experience, and out of the tendency of populations to outrun the space and resources of their native habitats. The psychological causes of wars are comprehended chiefly under the head of the war cult and "hundred per cent." patriotism which is averse to all pacific endeavor as a weak-kneed and flabby surrender of the manly virtues. The social causes of wars are found chiefly in the struggle of interests, the dogma of social Darwinism which represents war as the social analogue of the struggle for existence and the cause of all social and cultural progress, and the racial dogmas and egotism which contend that some one race has been designed by God to inherit the earth. The economic causes of wars fall mainly under such headings as modern imperialism and the struggle for raw materials and markets, trade rivalry and the contemporary system of discriminatory and differential tariffs. The political causes of wars emerge primarily as the doctrine of the finality of the national-state system and the dogma of the absolute nature of political sovereignty which militates against international organization or treaties that limit the complete independence of the state in every field. Along with these, as a combination of psychological and political factors, is the conception of national honor which leads to the view that arbitration of so-called "vital issues" is a surrender of national dignity. Finally, the ethical and religious causes of wars are to be found in the dogma that the state is an entity unto itself above all considerations of individual morality, in the assumption of the nobility of military sacrifice, in the view that war brings forth the noblest ideals and sentiments which mankind is capable of manifesting, and in the assurance that God is invariably to be found rendering loyal support to the policies and arms of a particular state. Only in such a broad sweep of influences making for armed conflict can we hope to comprehend the multiplicity of the factors which the ardent and disciplined pacifist must grapple with if he is to

have any prospect of success in his campaign against war.

It is obvious that the remedy is to be found in removing, as far as possible, these circumstances and influences which are likely to lead to open conflict. A more pacific type of conditioning must be provided for man, so as to bring out his cooperative traits and obstruct his more pugnacious trends. Intellectual and cultural conflict must be substituted for physical combat. Birth control must be widely adopted to keep populations within those limits which are adapted to the environment of the group. The war cult must be undermined and the pacifist upheld as a higher type of citizen than the unreasoning and bellicose patriot. Indeed, pacifism must be shown to be the highest form of patriotism. Civic obligation must be substituted as a higher ideal than "Hundredpercentism." The untenable dogma of social Darwinism must be uprooted and the fact that wars tend to leave a population biologically and institutionally worse than before should be thoroughly inculcated. It must be shown that the struggle of interests in the international field can be carried out pacifically, as they have come to be within national boundaries. The racial obsession, which has arisen in crude form in recent years, should be laid at rest for all time by exposure to the light of even the most elementary scientific considerations relevant to the subject. Contemporary imperialism should be mitigated through the refusal of national states to put the armed force of the nation behind the private ambitions and claims of individual investors. There should be a progressive movement toward more thorough internationalization of the supply of raw materials and natural resources, and we are in immediate need of a revival of the healthy early nineteenth-century movement for freer trade. It should be shown that the national state, like tribalism, feudalism and other epochs in political development, is but a stage in political evolution, to be followed logically and historically by world organization in the political field. It must be indicated that the dogma of absolute political sov-

ereignty is a metaphysical fiction, whether applied within or beyond the boundaries of the state, and it should be made clear that no state can be or ever has been completely free or independent in every field of activity. We should emphasize the fact that willingness to arbitrate is a far better proof of national honor than the eagerness to fight, in the same way that the private citizen commands confidence when he gives evidence of a willingness to take his case to court. The fiction that a state occupies a special moral plane which renders the acts of its servants immune to moral judgments and condemnations should be relentlessly exposed. It is also easy to prove that war, far from stimulating our more heroic virtues, actually debases man more than any other social and cultural situation and brings forward the worst traits of *homo sapiens* in the way of brutality, cupidity and intolerance. Finally, it is easy enough to puncture the silly contention that God can be assumed to give evidence of any special favoritism toward any nation or group of nations or to set the stamp of divine approval upon carnage in any form.

If those who have the interest of mankind at heart are capable of visualizing the task which confronts them and have the courage to risk unpopularity and opposition in the effort to handle these issues, then there should be some prospect of ultimate success for the pacific program, especially if those interested in the reduction of the causes of war join hands cordially with those who are devoted to the cause of outlawing this leading scourge of humanity.

V. THE NEED FOR WORLD ORGANIZATION

It would seem, however, that no plan for eliminating the causes of war can be complete without provision for an adequate type of international organization with the power and inclination to enforce peace. In view of the events of the last fourteen years, many are pessimistic with respect to any proposal of this sort, but they fail to remember that the very

excesses of national aggression have, even in the past, forced upon the world's attention well-meant schemes for ending war and providing for peaceful methods of adjusting national claims. The destructive Thirty Years' War produced the proposals of Emeric Crucé (1623), Hugo Grotius (1625), and Sully (1638). The dynastic wars of Louis XIV invited the plans of William Penn (1693) and the Abbé de St. Pierre (1712). The reaction against the Seven Years' War, as exemplified in the rationalism of the latter eighteenth century, brought forth the plans of Voltaire, Rousseau and Bentham. The French Revolutionary Wars stimulated Kant's proposal for a federation of republics, and the Napoleonic baptism of blood led to Alexander's theological proposal for the assurance of international peace, and to Castlereagh's more practicable, if less noble, scheme for periodic European congresses of nations when questions should arise which threatened the peace of Europe. The "concert of powers," thus originated, proved unequal to coping with the aggressive nationalism of the last forty years and it has required the most expensive and deadly war in human history to drive statesmen into even a half-hearted determination to take effective steps to prevent the recurrence of such a disaster in the future. We now have the League of Nations in conception and structure. It remains to transform it from a league of victors into an organization honestly devoted to undoing the injustices of the past and to promoting fair-dealing in the future.

No league of nations can ever go forward to become a great world force unless a pacific and constructive spirit dominates the foreign offices and public opinion of these same nations. Georges Demartial, the eminent French publicist, has well stated the view of the inevitable futility of the League of Nations if it does not abandon the war hatreds, the war-time theories of war guilt, and the fiction of Article 231 of the Treaty of Versailles:³

³ G. Demartial, "France's Responsibility for the World War," in *Current History*, March, 1926, p. 792.

But it may be said, does not the League of Nations exist to prevent war? A humorous suggestion! If war becomes of rarer occurrence it will be because war itself has become too cruel and devastating, because of fear of aerial warfare and of the consequences of failure, and not because of the hypocrites of Geneva. France was represented there by Viviani, who said of the war that, "It was the final and decisive clash of the dark powers of evil with the radiant powers of good." England was represented there by Lord Balfour, who said: "It was the war of Heaven against Hell." The men who represent the different peoples there today are hardly less biased. Imagine the butchers of St. Bartholomew at the head of a League of Religions! I will believe in the League of Nations when it has painted on the walls of the Assembly hall a picture representing the judges of Versailles crouching over Germany, each with an upraised dagger in his hand, and with the following inscription below: "Admit that you are sole cause of the war or we will finish you off."

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CHAPTER XII

THE TWENTIETH CENTURY CREATES THE NEW HISTORY

I. INTRODUCTORY CONSIDERATIONS

THUS far in this volume we have been considering some of the leading historical changes of the last century which help to explain many of the chief problems involved in "living in the twentieth century." We shall devote the last chapter to a discussion of the effects of twentieth-century conditions upon the writing of history itself. In other words, we shall examine into what it means to write history in harmony with the knowledge and outlook created by contemporary civilization. The much vaunted "new history" is nothing more than the type of historical orientation and synthesis which has been brought about by thoughtfully considering the past in the light of the knowledge and issues of to-day, in the same way that Orosius composed his *Seven Books of History against the Pagans* in the imminent fear of Hell and with the Christian theology as the orbit of his intellectual life.

It is probable that no other term passing current among historians is capable of giving rise to so sharply differentiated a glandular response, or is so potent in upsetting our endocrine balance as the phrase: "The New History." To the older type of historian these words are equivalent to offering a Grand Kleagle or Supreme Wizard of the Ku Kluxers a *plat du jour* composed of Irish stew garnished with unleavened bread. To the embattled followers of Professor James Harvey Robinson the phrase quickens the pulse and stiffens the spine much as the unfurling of the banner of the cross brought about similar physiological

changes upon the part of the medieval crusaders. Others, while sympathetic with the movement away from the older episodic political history, are, nevertheless, annoyed by the term, because it is associated in their minds with a somewhat bellicose propaganda, irritating to sensitive nerves attuned to the somber silences of library stacks, book lofts and secluded studies, and accustomed to the conventional professional urbanity and serene composure of the academic American historians. We shall endeavor in this chapter to present a conciliatory appraisal of the new history, to outline the program implied in its assumptions and aspirations and to indicate the preparation essential to its cultivation. Whatever the defects in this presentation, such an exercise is valuable, as the new history can not be successfully cultivated in an aimless or indifferent manner. We must know what we want to achieve and how to secure such results.

The first question, one raised with subtlety and cogency by Professor Carl Becker in his review of my *New History and the Social Studies* in the *Saturday Review of Literature* for August 15, 1925, relates to the actual nature and scope of the new history and to the validity of its claim to novelty. It has generally been held that the new history means a type of historical writing which has abandoned the Freemanesque conception of the adequacy of history as "past politics," anecdotally organized and episodically expounded. It is conventionally presented as a mode of historical exposition which attempts in the broadest way to reconstruct the history of civilization in its totality—being, as Professor Robinson expresses it, "all that we know about everything that man has ever done or thought or hoped or felt." As to the scope of the new history this view is, in a rough general way, adequate and accurate, but even more fundamental is the triumph of the genetic orientation and objectives.

But this revised and more expansive conception of the scope and task of history carries with it by firm implication another and equally fundamental requirement or obligation,

namely, a type of training adequate to allow the aspiring historian to execute these more exacting tasks of his profession with confidence and success. This broader training must consist primarily in such a grasp upon the nature of man and his relations with his natural and social environments as to enable one to cope with the difficult problem of reconstructing the divers phases of the history of civilization and to analyze that institutional evolution which preserves the record of man's gradual conquest of his material surroundings and his ever greater success in organizing the cooperative efforts of mankind. In other words, those looking forward to work in the new history must be thoroughly grounded in biology, anthropogeography, psychology and sociology. They must also be particularly trained in such of the special social sciences or in such branches of science or esthetics as are most germane and indispensable to the particular aspect of historical writing in which they intend to engage.¹

We shall discuss in a later section of the chapter the preparation essential to a competent exploitation of the new history, but we will do well to insist at the outset upon the fact that our revised notions of the desirable nature of history imply, not only an ambitious extension of the range of the historian's interests and the scope of his burdens, but also an equally comprehensive expansion of the preparation indispensable to any work in this field which is likely to inspire confidence or to possess permanent value. It has been suggested by some that all that is needed to write the new history is a change of heart²—that one only has to change his mind to be able to turn from dealing with the genesis of the Holy Alliance or the break-up of the Whig party to an analysis of class-conflicts in antiquity, the history of medieval natural science, a psychoanalysis of Voltaire, the

¹ I have argued this position at length in my *New History and the Social Studies*.

² Cf. Becker, *loc. cit.*

economics of the Continental System, the evolution of modern jurisprudence or the progress in medicine since the downfall of the Hippocratic technique. It is said to be stated in the Scriptures that no man merely by taking thought can add one cubit to his stature. It may be contended that it is much more difficult merely by taking thought to transform one's self from a conventional narrator into a cultural or institutional historian. The new history is, then, both a new program in the content of history and a new set of requirements for the practise of history.

So much for the scope of the new history; what about the legitimacy of its claim to the embellishing adjective which proclaims its alleged novelty? In its meaning as a range of historical interests wider than politics and diplomacy, there can be no valid claim for absolute or unique novelty. The first comprehensive historical work, Herodotus' *History of the Persian War*, was in many ways a contribution to cultural history, and in every subsequent age there have been writers whose interest in the past transcended military campaigns and party conflicts, if only to expend itself on the miracles achieved by a saint's femur or the ravages wrought by witches. The chief claim which the new history can make as to novelty with respect to the scope of its subject-matter relates to the degree to which this point of view has gained acceptance in the present age. In previous generations the writers on the history of culture were lonely and often despised individuals. To-day, an overwhelming majority of the younger historians have brazenly espoused the prospectus of the new history, while many of the older exponents of conventional historical writing have capitulated or are showing signs of weakening morale, something far more significant and more provocative of rejoicing than the conversion of the ninety-and-nine exuberant youths. The triumph of the evolutionary view-point and the genetic attitude, leading the historian to be chiefly interested in showing how the present order has come into being, is, however, truly novel

and quite unique. This is the real new history at its best:³

As a new conception of the preliminary preparation necessary to study and write history, the contentions of the new history are unquestionably novel. Down to the time of Von Ranke, while there were a few writers like Polybius and Mabillon who insisted on special training and qualifications for the historian, it was generally held that literary ambitions and a flowing style qualified any person to attack history in a serious fashion. Von Ranke and his successors declared that one must prepare for historical work by intensive training in the principles of documentary criticism and historical bibliography. The contention that the historian must be thoroughly equipped with knowledge in the social sciences is a much more recent position. The social sciences have only recently arrived at that state where their subject-matter is sufficiently reliable to serve as a dependable foundation for historical insight and analysis. The notion that history must rely upon the social sciences as much as upon diplomatic or paleography is a very late discovery indeed. It will probably be ultimately conceded that the most original and novel section of Professor Robinson's revolutionary work, *The New History*—that manifesto of the new historical order—is the chapter on "The New Allies of History." The new history, then, is new in the sense of the more general acceptance of a broader set of interests by the majority of historians in the West, and is novel in its genetic orientation and recognition of the more extensive preparation necessary for a competent execution of its aims and methods:⁴

³ The theoretical basis of this position is well stated by Professor Teggart in his *Prolegomena to History; The Processes of History; and The Theory of History*. I have endeavored to summarize the leading aspects of the progress of the new history in my chapter in E. C. Hayes, (Ed.) *Recent Developments in the Social Sciences*.

⁴ See *The New History and the Social Studies*, passim; and A. C. Krey, *Report on History and the Other Social Studies in the Schools*. The programs of the American Historical Association can scarcely be taken as an accurate reflection of the interests or wishes of the majority of the American historians at the present time.

II. SOME PHASES OF THE TRIUMPH OF THE NEW HISTORY

The development of the new history seems to have been the product of many different factors and influences. In the first place, there were a number of writers whose individual interests combined a deep concern with the past and a wider outlook than that afforded by politics, diplomacy and military strategy. With Wilhelm Riehl it was a romantic story-teller's interest in the Middle Ages; with Freytag a dramatist's projection of his creative insight into the past of his own country; with Burckhardt an esthete's appreciation of artistic achievements in the great epoch of Italian art; with Renan, Draper and Andrew D. White the Rationalist's omnivorous appetite for facts relating to the intellectual emancipation of the race; with Green the craving of a sensitive and cultured soul for a more adequate portrayal of the real basis of his country's greatness; with McMaster the appreciation by a practical-minded engineer of the engrossing nature of the story of national evolution based upon the life and interests of all classes.⁵

Another powerful influence was that exerted by the evolutionary hypothesis, particularly the genetic interests of the biologists. As Professor Robinson has so often stated, it was the biologists who first taught the historians the principle of development and the genetic attitude which must be regarded as the corner-stone of the more vital phases of the new history. The primary concern of the historian of the modern stripe with how things have come about has been due chiefly to the reaction of the evolutionary philosophy upon the more alert and receptive historical minds. The historical point of view, then, was missed by the historians for three thousand years and had to be supplied by the natural scientists, though Hume and Turgot in the eighteenth cen-

⁵ Cf. E. Fueter, *L'Histoire de l'Historiographie Moderne*, pp. 708-15; G. P. Gooch, *History and Historians in the Nineteenth Century*, pp. 353-58, 373-94; W. A. Dunning, "A Century of American Historiography," in *Annual Report of the American Historical Association*, 1917; Barnes, in Hayes, *op cit.*

ture caught glimpses of a possible science of social change.⁶

This genetic interest in tracing the origins of things came at a time when civilization had been profoundly revolutionized by great scientific, technological and economic transformations, so that tracing the development of culture and institutions could no longer mean merely constitutional history, party development, the genesis of diplomatic entanglements or the genealogy of dynasties. It has to mean such things as the genesis of the dynamo, surgical anesthesia, international exchange, radio-activity, syphilo-therapy, mental hygiene, the factory system, the internal-combustion engine, the Bessemer process, mechanical devices, the printing-press and a host of other achievements which had never disturbed the slumbers of the complacent Freeman. In other words, the impulse to find out how the present order had arisen arrived at a time when the prevailing civilization no longer presented itself in the most interesting and dramatic fashion under the guise of a few gentlemen struggling for economic privilege, political prestige and the power to amuse themselves at the expense of the lives of the poor puppets who constituted the paid standing armies of despots more or less benevolent. This virtually forced an interest in the history of civilization.⁷

The genetic method of tracing development led thoughtful students to the next and final stage in the evolution of the new history, namely, the effort to interpret historical evolution in such a fashion as to discover what significance, if any, attaches to the mutations of civilizations and the genesis of social institutions. While the more up-to-date type of historian no longer hopes to discover the will of God or the ultimate destiny of mankind in the record of the past,⁸

⁶ Cf. James Harvey Robinson, in *Harper's Magazine*, August, 1926, pp. 267-68; and F. J. Teggart, *The Theory of History*.

⁷ Cf. J. H. Robinson, *History of Western Europe* (new edition) Chaps. XXXVIII-XL; A. C. Flick, *Modern World History*, Part IX.

⁸ The quest for the hand of God in history has not entirely disappeared. See the work of the president of the American Historical Association, Henry Osborn Taylor, *The Freedom of the Mind in History*.

as did those who were wont to view history as philosophy teaching by experience, yet it must be conceded that the only significant events in the past are those which have relevance for the illumination of the present or future generations. Further, the only real value which history possesses is its potential aid in enabling us better to understand and control our own civilization.⁹

In the work of putting together these various impulses to the formulation and launching of the new history the chief figures have been Karl Lamprecht, Henri Berr, James Harvey Robinson, F. J. Teggart and F. S. Marvin.

Lamprecht's system grew out of his interest in cultural anthropology, the psychological approach of Wundt, Comte's attempt at a psychological interpretation of human progress, and his own wide cultural interests extending from economic evolution to musical history. Whatever one may think of Lamprecht's system and historical formulæ, his work was the first to launch the controversy that has finally ended in the definite triumph of the new history.¹⁰

Henri Berr has not only written learnedly on the theoretical aspects of historical synthesis, but has also projected a stupendous series—*L'Évolution de l'Humanité*—designed actually to achieve this synthesis. His theoretical background is to be found in a sociological view of institutional evolution, a desire to introduce a scientific attitude toward historical causation, the elaboration of a so-called logic of historical synthesis, and a world point of view, making his conception of historical synthesis truly coextensive with a study of the history of humanity as a whole.¹¹

⁹ See on this point the highly illuminating articles by James Harvey Robinson in *Harper's Magazine* for August and September, 1926.

¹⁰ See *The New History and the Social Studies*, pp. 198ff.; Gooch, *op. cit.*, pp. 588ff.

¹¹ See his *La Synthèse en Histoire*; the best statement of his theoretical principles is contained in the general introduction to his great *Évolution de l'Humanité* series, available in English under the title, *The History of Civilization* (Knopf, 1925ff).

Unlike Lamprecht, Berr and Teggart, James Harvey Robinson has not evolved any system of theoretical principles in regard to history.¹² His conversion to dynamic history came gradually and empirically. It would appear to the writer that the key to Robinson's psychogenesis as an historian is simply to be found in the fact that he was and is an unusually thoughtful and intellectually inquisitive individual, and the new history, after all, is little more than thoughtful history. The beginnings of Robinson's secession from conventional history are to be found in his genetic attitude toward the French Revolution. This took him ever backward toward the origins of humanity. As he has himself expressed it, he moved in the twenty years which followed his initial work as an instructor at the University of Pennsylvania from the guillotine back to the fist hatchet. Likewise, he was greatly influenced by the biologists and their evolutionary and genetic bent. As he came to understand better how thought and culture have gradually developed, he became more interested in the significance of the historical process, and this converted him to the view of the primary importance of the interpretation of historical materials. Robinson's undisputed primacy in the movement for the new history in the United States has been due to the popularity of his text-books, his success as a teacher in one of the great graduate schools of the country, his mild and amiable persuasiveness as a propagandist of the newer attitudes, and the number, loyalty and persistence of his followers.

Of all the important writers on the newer methods and attitudes in history, no other has so suffered from the discrepancy between his merits and his influence as Professor Teggart.¹³ Unquestionably the foremost writer in this coun-

¹² On Robinson see my *New History and the Social Studies*, pp. 204ff.; and my chapter on him in H. W. Odum, (Ed.) *American Masters of Social Science*.

¹³ The best statement of Teggart's theoretical views is contained in his *Theory of History*; cf. my comments in the *New York Nation*, September 8, 1926, pp. 223-24.

try, if not in the world, on the theoretical basis of the new history and the most forceful exponent of the view of history as a science of social change, he remains practically unknown and without influence outside the circle of his few students. This has been due to his preference to play a lone hand—denying the significance of what others have done and refusing to associate himself actively with those who have borne the burden of establishing the new history.

Mr. F. S. Marvin is not a professional historian, but he has done more than any one else in England to arouse an interest in the new history, and to promote its cultivation.¹⁴ A strong protagonist of the reality of progress and firmly convinced of the potency of science and technology in promoting social change and human welfare, he was impressed during the World War with the disastrous nature of nationalistic discords and divisions. To offset this he founded a series of lectures and publications designed to promote world unity through a common understanding and appreciation of the cooperative and international nature of cultural progress. His own three books and the Unity Series, which he has planned and edited, have been the most notable achievements of the new history in England.

The new history has recently met with a surprising support in Italy. It was foreshadowed by the much discussed book of Ferrero, *The Greatness and Decline of Rome*, and has received powerful support from the great philosopher, Benedetto Croce. The progressive Italian historians are led by Corrado Barbagallo, and they have as their organ the notable journal, the *Nuova Revista Storica*, launched in 1917.

¹⁴ Marvin's two most characteristic works are *The Living Past* and *The Century of Hope*.

III. A PROSPECTUS OF THE NEW HISTORY

It was once held that any one who could supply himself with a quill pen and an ink-pot could be an historian if he saw fit to copy some inscriptions from monuments in a local churchyard or to prepare an essay on Cleopatra to be read before a local sewing-circle. There have even been thoughtful and progressive historians in our own day who decry the effort to define and demarcate the field of history and who would rest content with urging any one who desires to do so to jump in and do his level best by tackling whatever historical problem may intrigue him. It seems to the writer that the correctness of this position can scarcely be conceded unless one is willing to admit that every person who mixes Seidlitz powders is a physician and that all who eagerly present themselves with sharp butcher knives are to be encouraged to go out at once and practise surgery. Even the older and much simpler episodal and anecdotal political, diplomatic and military history suffered from lack of a unified and well-thought-out methodology and program of work. The new history will certainly be damaged unless there is a general consensus of opinion as to its program and as to the training essential to the execution of its aspirations. It will require as much agreement, unity and cooperation as now exists in the medical, legal or engineering professions.¹⁵

The program of the new history with regard to the scope of its interests is by definition all-inclusive. It is the recording of everything which has happened in the past. Nothing which has taken place in the past can be ruled out as non-historical in any strict or literal sense. But this does not mean either a sloppy indifference or an inchoate anarchy. The fact that the historian of the newer type admits the historical nature of everything which has taken place in the past, from the incantations of primitive shamans to the cos-

¹⁵ Cf. *The New History and the Social Studies*, passim.

metic formulæ of Solomon's 731st wife, the invention of the steam-engine, and the texture of the mattresses which supported Washington's manly form during his slumbers on the way from Virginia to Massachusetts, does not mean that he is equally interested in all of these matters or believes them uniformly important. It is doubtless true that a man is likely to do good work only in a field in which he is interested. If one *must* be an historian and has an overpowering passion to investigate the evolution of naval strategy in Switzerland he should be encouraged to do so, but he should not be led to regard such an exercise as of equal importance with studies in the Industrial Revolution in England or with research into the history of contemporary technology. A common-sense attitude must prevail here. The relative significance of historical materials is to be determined in part by the nature of the period in which they fall, in part by their bearing upon contemporary life, but in any case practically and immediately by the purpose the writer has in mind. Certainly, the history of science in the Middle Ages is not so vital a field as the study of medieval religion, nor is religion in the contemporary age so relevant as scientific development. The history of astrology is by no means so important as the history of astrophysics since Copernicus, nor is the history of magic so significant as the evolution of medicine since 1800.

The two chief tasks of the new history are: (1) to reconstruct as a totality the civilizations of the leading eras in the past, and (2) to trace the genesis of contemporary culture and institutions. In the first of these problems the relative importance of the divers aspects of human culture should be determined by their significance in the age to be reconstructed. In attempting to reconstruct the civilization of the age of Pericles the criteria of the importance of events and interests should be the estimates placed upon them by the Periclean age, not those of the period of the historian. It is this fact which would make it very difficult,

if not quite impossible, for a pure, pious, dry, unesthetic and celibate professor of history in a Kansan denominational college to depict with skill the civilization of the age of Alexander or Augustus. He would be as much shocked by the presence of drinking-parties and of an engaging type of prostitution as by the total absence of the Sunday-school, the anti-cigarette law and the Eighteenth Amendment. This was the reason why the Christian historians so distorted their accounts and estimates of pagan culture. A civilization whose philosophy was concerned with teaching people how to live happily could scarcely be appreciated and interpreted by an age whose all-absorbing passion was to prepare to die safely and successfully.

On the other hand, when one is occupied with the second of the main tasks of the new history, namely, the tracing of the development of the characteristic traits and institutions of contemporary life, the criterion of the relative significance of the different aspects of culture must be their cogency and relevance with regard to the present age. Religion was infinitely more characteristic of the Middle Ages than science, yet with reference to contemporary civilization the history of science in the Middle Ages is more pertinent than the study of medieval religious life. If one should attempt to portray the Hellenistic civilization as a whole he would have to assign far more space to the astrologers than to the Hellenistic astronomers, but if he is interested primarily in indicating the genesis of contemporary civilization then the work of Aristarchus and Hipparchus would have to be regarded as more significant than the work of all the astrologers in the whole of classical antiquity. If one were to give a true picture of the intellectual interests of the period of the Protestant Reformation one would need to deal far more with such issues as justification by faith than with the incidental economic views of Luther, Calvin and other leaders. Yet, with respect to the evolution of the culture of to-day the Protestant defection from the Catholic economic opinions

and practises was of infinitely greater moment than all of the theological issues of that age combined. To the medievalist Roger Bacon must appear as primarily a medieval character in his interests and activities, while to the genetic historian the interesting things about Bacon are his few flashes of modernity and his incidental references to the virtues of the inductive and observational method.

These few examples will suffice to indicate that the relative importance of historical events and cultural manifestations is not monistic or absolute, but dual and perhaps even more pluralistic. Every fact of history has its relative significance with respect to: (1) its importance in the age of which it was a part; (2) its bearing upon the genesis of contemporary culture. No student of history can approach his problem with intelligence or competence without fully recognizing the reality and necessity of this differential appraisal of historical material and being thus guided by the aim he has in mind.

It has been usually assumed that any historian in a single work could execute both of these tasks; namely, to recreate a civilization and to indicate its relation to the present age, but it is doubtful if this is true. The wide difference in the relative importance of the same materials when viewed from one or the other of the two angles of interest is likely to lead to serious distortion in one or the other of the phases of the two-fold achievement, if not in both of them.

It will, of course, be apparent that if one is interested in tracing the genesis of a civilization other than one's own, the criterion of the importance of one's materials must be their relevance with respect to the civilization whose origins one is tracing. Thus, to one investigating the genesis of Greek civilization, the importance of a special type of Egyptian data would have to be decided by its particular contribution to Hellenic culture rather than by its relative position and significance in Egyptian civilization or its importance for one's own day.

Some may complain that these tests of the significance of historical material are relative and pragmatic. Is there no absolute and transcendental test? Apparently not, beyond the fact that in the last analysis the value of historical materials in explaining our contemporary civilization far transcends any other significance they may have.

This brief discussion of the all-inclusive scope of the vision and interests of the historical practitioner of the new school and of the twofold criterion of the relevance of historical subject-matter leads naturally to the problem of the organization of historical materials in the light of the newer concepts and attitudes. In the old days the situation was simple. The skeleton of political and military history was always present and was looked upon as wholly adequate to serve as the framework for the construction of the complete epic of humanity. The conceptions of the new history are as destructive to this primitive simplicity and guilelessness of the older history as modern astrophysics, evolutionary biology and Biblical criticism have been to the simple faith and comforting dogmas of our fathers. We must now recognize that not only is the political staging utterly inadequate for the construction of the complete edifice of history, but also that no single category of historical events or facts can serve as the basis for the organization of historical materials. There is no one key to the riddle of historical causation. At times one or another factor may rise to a position of transcendent importance, but no single "cause" or "influence" has been dominant throughout all of human history.

In a rough and tentative way it may be held that the chain of historical causation is something like the following:¹⁶ We have as the two relatively constant factors in his-

¹⁶ I have endeavored to interpret the history of Western society according to this theory of causation in Book I of Volume I of Davis and Barnes (Eds.) *An Introduction to Sociology*; cf. A. H. Hansen, "The Technological Interpretation of History," in *Quarterly Journal of Economics*, November, 1921.

tory the original nature of man and the geographical environment, but these can not be said to be absolutely static, and they are so involved with other conditioning influences that their interaction is continually varying in nature and extent. The original nature of man, reacting to a particular form of geographic stimulation, will produce a characteristic outlook upon life. This will control to a considerable degree the extent to which science and technology can emerge and develop. The state of technology will rather sharply condition the nature of the economic life which can exist in any age and area. The economic institutions tend to have a powerful conditioning, and sometimes a determining, influence over the other institutions and cultural factors: social, political, juristic, religious, ethical, educational and literary.

Yet this is, in reality, an over-simplified statement of the historical process. Cause and effect are continually acting and interacting upon each other. A few mechanical inventions such as printing or new methods of transmitting information may so alter the life of man as completely to transform the dominating psychology of any age. Again certain psychological and cultural factors may at times have sufficient power to obstruct the obvious dictates of economic advantage and material prosperity. The skein of historical development is a tangled and complicated one. It is a profound historian who can solve the problems and the sequence of historical causation in any single epoch, to say nothing of making an effort to formulate a universally valid and applicable interpretation of human history as a whole.

Some who are alert enough to observe the collapse of the political scaffolding which once supported the laboriously active historians, will attempt to seek solace in the thought that, if we can not use political events as the framework of historical efforts, we can at least fall back upon national entities and write the story of the evolution of French culture, Italian culture, Spanish culture and so on, but here we

shall once more have to take the joy out of life. The whole conception of national history was inseparably linked up with the political fetish and the assumption of political causation. When one looks at history from the standpoint of the evolution of culture and institutions, it at once becomes evident that there can be no such thing as national history.¹⁷ Dynastic changes, partisan politics and diplomatic intrigues may by definition be strictly national affairs, even though they rarely are completely so in practise, but cultural and institutional development is not, never has been, and never can be a national matter. A national history of the automobile, the printing-press or the microscope is no less unthinkable than a cultural history of France or Germany. It may be amusing to the scholar and satisfying to the historical curiosity to study the ways in which internationally derived and conditioned phases of culture are specially developed and cherished or particularly restrained and condemned within the confines of any state. But any national history of culture and institutions is bound to be both artificial and trivial, when compared to a study of institutional and cultural genesis as a process which knows no such thing as the artificial boundary-lines drawn by dynastic ambition or economic avarice. We can continue to study the nationalistic conditioning of culture, but certainly not the nationalistic evolution of culture. National history will go down to oblivion before the new history no less certainly than political history, when viewed as the foundation for the organization and presentation of historical facts. A nation was once viewed as a political entity. Then Renan, Zangwill, Zimmern and others denied its political basis and described it as a cultural unity. We shall probably have to go one step further and designate a nation as a dangerous cultural illusion—a cultural psychosis or a sort of cultural dementia.

¹⁷ Cf. W. K. Wallace, *The Trend of History*, and *The Passing of Politics*; F. S. Marvin, *The Century of Hope*, and (Ed.) *Science and Civilization*; Flick, *op. cit.*, Part IX; H. G. Wells, *The Outline of History*.

For students of the problem of nationalism and of the questions of war and peace, as affected by historical writing and teaching, the above considerations have deep significance, but we can not enter into these matters in this chapter.¹⁸

Driven from his previous havens of refuge and his vantage-points in the political framework of history and the nationalistic mode of compartmentalization, the desperate historian of the old school may at least contend that he can dig in and take his bearings within the shelter and moorings provided by the conventional historical chronology of ancient, medieval and modern history. But the relentless expositor of the new history can give him even less quarter here than with respect to the theory of political causation and the nationalistic orientation.¹⁹ The anthropologists have taught us that, from the purely chronological point of view, the older chronology is utterly inadequate and incredibly distorting. The whole range of written history, comprised within the older categories of ancient, medieval and modern periods, is unbelievably modern from the standpoint of both time perspective and cultural achievement. Ancient history would, in reality, be the period of the culture of the Eolithic and Paleolithic ages; medieval history would probably best correspond to the culture of the Neolithic; modern history would run from the beginning of the age of metals, at least three thousand years before Christ, to the scientific and industrial revolutions since the middle of the eighteenth century; contemporary history would have to be invoked as a term adequate to describe the novel civilization which has arisen in the train of the scientific and industrial transformations of recent times.

¹⁸ Cf. J. F. Scott, *The Menace of Nationalism in Education*; C. J. H. Hayes, *Essays on Nationalism*; and my *History and Social Intelligence*, Part II.

¹⁹ For an illustration of the impossibility of harmonizing the new history and the old chronology see A. R. Cowan, *A Guide to World History*. For discussions of the nature of the newer chronology see my treatment of the subject in E. C. Hayes, *Recent Developments in the Social Sciences*, and in Davis and Barnes, *op. cit.*, Vol. I, Book I, Chap. 1.

But the cultural and institutional critique of the older chronology is far more devastating than that which may be derived from the new time perspective of human development. The older chronology was erected upon the notion that it was possible to block off large and distinct stages of human progress. This rested upon a considerable number of assumptions, all of them erroneous. The original basis for these divisions was almost purely chronological, a matter of dates rather than of culture. The chronological divisions related to matters of secondary historical importance. A battle was a battle, and the only difference between a battle fought in 561 B. C. and one fought in 827 A. D. was that the first was fought in 561 B. C. and the latter in 827 A. D. When the conventional chronology was utilized by the cultural historian it had to be assumed by implication that there existed a real gulf between the civilization of 324 A. D. and that of 326 A. D. or between that of 1452 and 1454 A. D. It was also necessary to assume that the whole cultural complex is a homogeneous entity, that Greek ethics are as ancient as Greek technology, that modern ethics are as modern as modern technology, and that all phases of culture evolve simultaneously and harmoniously. The older chronology was also based upon the obviously preposterous hypothesis of the essential synchronism and uniformity of culture the world over—assuming by implication that in 500 B. C. the world was enjoying an ancient pagan culture throughout, that in 1300 it was everywhere entirely medieval in character; while in 1850 it had become essentially modern in all areas.

Now it can be shown that a chronology based simply upon a sequence of basic years is of no vital significance whatever. The continuity of history proves the futility of any sharp division between eras. It is, moreover, a truism of theoretical anthropology and cultural history that the various elements in the cultural complex have a highly differential rate of development, as well as that the esthetic aspects of

culture seem to obey no demonstrable laws of evolution or progress.²⁰ If we mean by modernity social adequacy and scientific validity, then the ethics of the Greeks are far more modern than those of John S. Sumner or Calvin Coolidge. The artistic life of the Renaissance was, likewise, far richer and more expansive than that of to-day. It is obvious, then, that there can be no scientific type of chronology which is based upon the hypothesis of the uniformity of the rate of the development of all types of culture and institutions. Further, the rate of cultural evolution varies greatly as between the different parts of the earth. Imagine trying to describe under the caption of "ancient civilization" the cultures of China, Scandinavia, South America, Gaul, Mesopotamia and India in 1000 B. C., or under the heading of "contemporary civilization" the cultures of China, England, Germany, Russia and Brazil in 1890 A. D.! It would seem that the only type of chronology which can possess any validity whatever, must be a highly specialized one, based upon, and descriptive of nothing more than, the development of certain limited phases of culture or certain specific institutions within a relatively homogeneous cultural area. The conventional historian may retort that he might as well have no chronology at all. He would be right!²¹

The historian may shout in despair that this means insufferable confusion, anarchy and complexity. We must frankly admit that for the time being it does, but this is not a situation for which the advocates of the new history are in any sense responsible. It simply indicates that historians are beginning to awaken to the situation which faces us in every aspect of life to-day. It only means that history is coming to be contemporary in its outlook and is beginning to recognize what the theologian, philosopher, sociologist and student of ethics have come to recognize long ago. It signi-

²⁰ Cf. Clark Wissler, *Man and Culture*; M. M. Willey, in Barnes and Davis, *op. cit.*, Vol. I, Book V; Ferdinand Schevill, in *Annual Report of the American Historical Association*, 1921, p. 35.

²¹ See the references in foot-note 19.

fies nothing more than that the symbolic historical ostrich has at last raised his head from the sands of medievalism and humanism and given the twentieth-century world a thorough "once over." In the place of the rustic simplicity of life conditions, changing little from century to century, and instead of an illusory sense of security obtained from credulous and uncritical reliance upon a primitive cosmology and a few naive religious dogmas, our ostrich beholds the dynamic and rapidly changing mechanical and urban civilization of an industrial age, our disconcertingly expansive cosmology and the grave questioning of all the assumptions upon which man has been wont to justify his alleged place in the cosmos and his notions of safety before the corporeal and supernatural worlds. These startling changes in historical events and situations are forcing an equal revolution in historical concepts, aims and methods. It is little wonder that the first impulse of the historical ostrich is to make another dive into the sand.

In other words, the historian is only facing the implications of executing his craft in the light of twentieth-century knowledge and methods, in the same way that we are all faced with the readjustments forced upon us by the implications of really living in the modern age. Fifty years ago a cultured citizen of the United States could have felt wholly adequate and secure when buttressed up by faith in the doctrine of the Atonement, the protective tariff and the Republican party. To-day the same individual would be faced by the perplexities and gnawing uncertainties imposed by the impressive contemporary astrophysics which proves the insignificance of our planet and by implication of man himself, by skepticism concerning the whole socio-economic complex upon which the tariff system rested, and by a growing recognition of the utter incompetence of the Republican and Democratic parties alike, if not of the actual political incapacity of mankind when confronted by the complexities of the contemporary age. The changes forced in the orienta-

tion and methodology of an alert professor of history in an American university by the transformations of the last fifty years are no less profound and numerous.

If it be alleged that only a few superior minds could cope with the implications of this view of the tasks and obligations of the historian, it may be answered that the housewife can no longer practise medicine nor the barber surgery, yet medicine and surgery have both flourished to an unprecedented degree since these limitations upon the personnel of the profession have been both recognized and imposed.

We can not conclude this discussion of the scope and program of the new history without consideration of the relative importance of its two chief tasks: (1) a reconstruction of the civilizations of the past; and (2) a consideration of how the present order has come about. Of these it must be conceded that the latter is incomparably more important than the former. Indeed the reconstruction of the civilizations of the past has little importance except in so far as the facts thus organized help us better to explain the genesis of contemporary civilization. It may, of course, be of interest and amusement to try to see how far we can make the age of Pericles or the court of Justinian live again. Yet, such exercises, by and of themselves alone, must be viewed as on the level of sophisticated historical cross-word puzzles, or perhaps, better, historical cross-section puzzles. There is little practical reason for investigating how the Greeks lived unless this research will throw indispensable light upon how we live or should live at the present moment. Therefore, from any serious and pragmatic standpoint the reconstruction of the civilizations of the past is vitally important only in so far as it promotes a better understanding of the civilization of to-day, and is to be justified only in so far as it contributes to this end. To be sure, if any one gets more personal enjoyment out of research and speculation as to the mode of life of the ancient Hittites than from most other

forms of recreation, he should most certainly be tolerated in this diversion, but he should be taught to regard it as in much the same class as metaphysical speculation, smoking, golf and bridge-playing. Of course, if this individual should study Hittite civilization for the purpose of discovering the remote background of the present prosperity of Pittsburgh, Pennsylvania, in the Hittite origins of the iron industry, his researches have another and higher order of justification.

Therefore, those who have believed that the sole and final objective of the new history is to produce a majestic history of all civilizations in all times have a very imperfect and incomplete vision of the fundamental purpose of dynamic and synthetic history. The *History of Civilization* Series, planned and directed by Professor C. K. Ogden as a great extension of Berr's *Evolution of Humanity* Series, is by far the most advanced and significant historical undertaking which has been launched since Herodotus recounted how God came to the rescue of the Athenians, but it does not represent the final goal of historical endeavor. It must be supplemented by, and turned to the service of, an even more impressive series of volumes which would trace back to their origins such things as the blast furnace, the printing-press, private property, the concept of chastity, the place of the classics in pedagogical theory and technique, the protective tariff, party government, the automobile, radio-activity, psychoanalysis, the theory of democracy, the factory system, the monogamous family, trial by jury, venereal prophylaxis, surgical anesthesia, international exchange, modern improved highways, harvesting machinery, prohibition and the myriad other devices, institutions and practises which go to make up what we designate as life at the outset of the second quarter of the twentieth century. Such a series, it would seem to the writer, constitutes much more the ultimate goal of thoughtful and pragmatically useful history than to learn what Cicero ate for dinner on the evening previous to the launching of his invective against Cataline. The

writer would offer no objection whatever to the effort to portray with accuracy and absorbing vividness the mode of life of our ancestors; he would merely insist that those thus occupied realize that what they are doing is more after the fashion of amusement and entertainment on a lofty level than vitally important intellectual efforts.

In emphasizing this primary importance of the genetic analysis of the origins of contemporary society, we touch upon the only real lesson which history has for mankind. It must be obvious to all thoughtful persons that the social and cultural situations in the past were so different from those of the twentieth century that we can draw but little of value for ourselves from the experiences of remote historic ages. Yet, by tracing back to their beginnings our own culture and institutions we can not only better understand our own age but can also destroy that reverential and credulous attitude toward the past which is the chief obstacle to social and intellectual progress and the most dangerous menace to society.

It might incidentally be pointed out in passing that if history should come to be chiefly occupied with tracing the genesis of contemporary culture and institutions many of the problems mentioned above in connection with the general organization of historical material, the conflicting theories of historical causation, and the complicated issues of historical chronology would automatically disappear, for the problem in each case would be the origins and development of a single institution or cultural manifestation, though its history may be involved with that of related aspects of culture. One would not have to deal with stages of civilization as a whole or with general problems of historical causation.

Some may wonder why nothing has been said concerning history as a science of social change, the position so well expounded and defended by Professor Teggart. This, it would appear to the writer, is the legitimate field of historical sociology rather than of history, though he would not

quarrel with those who would bring it within the scope of the new history.²² If one desires to look upon the determination of the laws and processes of social causation as the final stage in historical science and the basic objective of the historian, then it is obvious that the two tasks of the newer history which have been described above: (1) the reconstruction of past civilizations and (2) the tracing of the genesis of contemporary civilization—would have direct and immediate value in supplying illuminating material to be worked over and reflected upon by the student of social causation or the science of social change.

IV. THE DESIRABLE TRAINING FOR THE NEW HISTORY

If the new history is to be a success, it will be conceded without argument that it must train an ever larger group of enthusiastic workers in this field in such a fashion as to render them capable of carrying on competent research and synthesis. If the older history suffered because of the inadequate training of its devotees, such would be much more the case with the new history which requires a far wider range of preparatory studies.²³ It may, of course, be conceded that a unique genius might be able to execute commendable work of this type with no extensive training, but we are not here concerned with genius. Though it may be difficult for them to succeed here, the new history, like the old, will have to depend to a large extent for its recruits upon earnest and devoted plodders who will need to be strengthened, sustained and guided by thorough and accurate training in their craftsmanship.

It must here be insisted that the new history is essentially a science and not an art of cultural reconstruction and institutional genesis. It may be freely conceded that the

²² Cf. *The New History and the Social Studies*, Chap. V.

²³ Cf. F. Schevill. *A History of Europe*, pp. 2-4; *The New History and the Social Studies*, *passim*.

distinguished historians of the new school will be those who add to their scientific precision and wide erudition creative ability in that type of artistry essential to the skilful reconstruction of civilizations and the astute tracing of the genesis of ideas and institutions. This is as evident as that the great diagnostician in medicine is something above and beyond a competent technical scientist, but he could not be a diagnostician of great repute without having first been a competent medical scientist. Least of all should literary artistry be confused with historical prowess. The clever essayist, as such, is no more an historian than a painter who produces a chromatic masterpiece designed to reproduce the likeness of St. Peter or Charles I. Van Dyke is as much entitled to rank as an historian as is Carlyle. Hogarth was as truly an historian as Macaulay.

It has been contended that the chief reason for the lack of influence exerted by history upon public life and opinion is the absence of stylistic distinction on the part of recent writers. It would appear to the present writer that the real reason has been the esoteric, lifeless, irrelevant and supine character of the content of too much of recent historical writing. If anything has discredited recent historical writing it has been the handicaps imposed upon it by archaic conceptions of the nature, scope and purpose of historical writing, by pedantic exhibitionism, by the choice of obscure topics, by Rotarian notions of good taste, and by the exploitation of historical writing for the purpose of promoting academic advancement and professional friendships instead of the cause of illuminating humanity and advancing human welfare. Even a Sombart or a Veblen will have his host of eager readers when there is something to constitute an ultimate reward for the painful perusal of his pages. There is no doubt of the value or need of good writing, but it should be good writing by good historians; in other words, good historical writing in the best sense of that phrase.

In particular, we must protest against the theory of the

uniqueness and the mysterious nature of historical events and situations. The so-called drama of history is nothing but the record of the responses of a bio-chemical entity to terrestrial stimulation. Human responses are no more mysterious or unique than the behavior of other animals or the reaction of organic tissues and inorganic substances as studied in the laboratory. The deliberations of the National Constituent Assembly in the French Revolution were as much a purely naturalistic product as the gambols of the Simians in Bronx Park. An historical situation is no more unique than a particular biological demonstration upon a guinea-pig, though it may indeed be a much more complicated affair. Further, it can not be too much emphasized that such aspects of an historical situation as are unique are those which are essentially irrelevant. Historical phenomena can be understood only to the degree that they are brought within the scope of the cogent type of scientific analysis as supplied by the relevant natural and social sciences.

Nor can one hope to prepare for the task of the historian merely through antiquarian research or by the acquisition of a vast body of conventional historical facts. The person who gathers and edits a vast number of inscriptions is no more of an historian, however valuable his services may be to learning and to history, than is the person who collects and classifies antique furniture for a museum of the fine arts. And the person who has committed to memory the last edition of Ploetz's *Manual of Universal History* is by this fact alone no more qualified as an historian than a person who has mastered an Ayer's Almanac of the vintage of 1870 would be to function intelligently as an interne in Bellevue Hospital in New York City.

The basis of all training in the new history will remain the conventional instruction in the technique of documentary research. It will be as necessary as ever for the beginning historian to be thoroughly grounded in the principles of research in documents, inscriptions and monuments. Indeed,

the training here will need to be more extensive than ever. In ancient history to-day the student not only has to be familiar with the collections of inscriptions, but must also be a master of prehistoric archeology and papyrology, neither of which disturbed the serenity of Curtius or Mommsen. In modern history there is need for a much wider technical knowledge than was ever required for research in medieval documents. The embryonic medievalist, once he had mastered his Latin, Greek and Arabic and the auxiliary sciences essential to documentary criticism, was ready to go ahead when provided with a glossary of theological terms and his Du Cange to guide him in regard to medieval usages. The student who would do research in contemporary history must face an infinitely greater range of requirements. He must be familiar with bookkeeping and accountancy, the rudiments of technology, the elements of corporation finance, the terminology of contemporary political science, the fundamentals of transportation, and a host of other manifestations of contemporary civilization if he is to be able to read with any intelligence the documentary sources which contain the raw materials of his profession. An historian of contemporary times who does not know the difference between a lathe and a carburetor, and a soviet and a Bolshevik would be in as sad a condition as a medievalist who believed the Immaculate Conception to be a sanitary precept.

Next to this basic technique of documentary research would come the acquisition of the truly historical outlook, which is to be found in a thoroughgoing acquisition of the evolutionary or genetic point of view. The historian should be as completely conditioned to think in terms of genesis and development as the physician is to deal in terms of diagnosis and prognosis. He should be a master of the basic conceptions and processes of cosmic, biological, cultural and institutional evolution, and should accustom himself to think always of man in terms of the nomenclature and processes of evolution. Evolution should be to the historian what

dynamics are to the physicist. In other words, we should insist that the person who intends to be a historian should at the outset be historically-minded.

Then the historian must master the fundamental facts and principles of anthropogeography, as interpreted by the most up-to-date exponents of regional geography, whose viewpoint is that of the cultural anthropologists. A book such as Lucian Febvre's *Geographical Introduction to History* will illustrate what is meant here. The historian should, in particular, master the physical and social geography of the area in which he expects to be a specialist. The practitioner of the new history must recognize at the outset that what has hitherto passed as historical geography, namely, a familiarity with changing political boundaries and battle-sites, useful as such knowledge may be, is not in any sense the geography of history. He should also be accustomed to thinking in terms of the three great stages of the geographic conditioning of history, such as outlined by Léon Metchnikoff, namely, the fluvial, thalassic and the oceanic. He must also be familiar with the great historical significance of that world-wide contact of cultures, so effectively described by Professor Shepherd in studying the historical significance of the expansion of Europe.

The student of the new history must also be thoroughly acquainted with man and his behavior, normal and abnormal. He must have mastered the rudiments of physiological chemistry and endocrinology. No person unfamiliar with the glandular basis of human behavior can hope to interpret intelligently the conduct of man, past or present. One must be as familiar with the action of the adrenal glands as with Potthast or Bernheim. It is probable that adrenalin played as large a part as pan-Slavism in Sazonov's decision upon war in July, 1914. Likewise, the intelligent and properly equipped historian must be familiar with the more common types of abnormal behavior associated with the major varieties of human pathology. Statesmen, diplomats and su-

preme court judges have usually been men of advanced age, and certainly no one could hope to understand the conduct of the aged unless acquainted with the behavior patterns associated with arterio-sclerosis and senile-dementia. Obviously, no one unfamiliar with the effects of syphilis could offer an adequate interpretation of the acts of not a few of the leading European monarchs, statesmen and diplomats. Chronic nephritis is often more illuminating in explaining a person's behavior than his politics, education, religion or economic investments. An understanding of the behavior patterns associated with the major psychoses and epilepsy is likewise indispensable.

Human behavior can not be understood when sharply separated from that of other animals, particularly that of our fellow simians. Hence the necessity for full acquaintance with comparative psychology. A book like Yerkes' *Almost Human*, the best and most reliable popular exposition of simian psychology, is indispensable to any one who would attempt a realistic interpretation of human behavior, and the beginner blessed with an adequate sense of humor should supplement this with Clarence Day's *This Simian World*. The real fact that man is only a little higher than the apes is of much greater significance to the understanding historian than the dubious assurance that he is only a little lower than the angels. Behavioristic psychology, with its stress upon social conditioning, is all-important to the historian who desires to interpret a personality in relation to his early life and social surroundings. And this must be supplemented by psychoanalytical psychology, which throws a flood of light upon unconscious motivation of conduct and insists upon an investigation and knowledge of the intimate facts of personal history and daily life if one is to learn the secret springs of human behavior in the case of any individual. Finally, there must be an adequate acquaintance with the facts of social psychology to make clear the effect of crowd psychological situations upon man and to indicate

the multifarious interactions of the group and the individual.

Anthropology must be cultivated, not only for its emphasis upon the evolutionary basis of man and his institutions, and for its clarification of the new time perspective of human development, but even more for the elucidation of the laws and processes of cultural development. There is more to be learned about the fundamental principles of historical development from such books as Ogburn's *Social Change*, Wissler's *Man and Culture*, and Kroeber's *Anthropology* than from the dozen best books yet written on formal historical method. More than any of the other new auxiliary sciences, anthropology is veritably the threshold to history, from the standpoint of both chronology and methodology.

No one can engage competently in the new history who is not thoroughly familiar with sociology, the basic and elemental social science, introductory to all others, as well as with the special social sciences of economics, political science, jurisprudence, ethics, etc. History is a record of man's development as conditioned by his social environment. Hence, it is quite impossible to interpret this record intelligently without a scientific knowledge of the facts and processes of group life as explained by sociology and the special social sciences. Further, if one expects to execute a type of work which calls for more than average knowledge of some special social science, this latter must be thoroughly mastered. For example, no one should think of attempting detailed work in economic history who is not thoroughly trained in every leading branch of modern economics and in economic statistics. If one hopes to write in the field of history of science or esthetics, he must add to the above a specialized familiarity with the natural sciences or the fine arts.

Many who might admit the validity of the above ambitious and exacting program of preparation for the new history will contend that it is simply impossible for any single individual to meet such requirements. Such an objection appears to the writer to be specious and inaccurate. It will be easy

enough to achieve such a preparation, once its necessity is understood to the same degree that the requisite special preparation for medicine and engineering is now fully recognized and admitted. We have already our pre-medical courses in the colleges, and our professional medical courses which follow. In due time we shall have our pre-history courses and our professional schools of history and the social sciences where the above educational program can be fully realized. It will require no more time than is now so largely wasted through unplanned and uncoordinated efforts in our colleges and universities. All of the requirements for the successful student of the new history could be easily met in the seven years now exhausted by our conventional history student in securing the A.B. and Ph.D. degrees. We should then have something when we get through with the preparatory process beyond what President Little of the University of Michigan has designated as the pedantic and narrow-minded specialist who knows more than any other living person about the suspenders of Henry VIII and does not care to know about anything else.

Some might cantankerously contend that few if any of the present expositors of the new history can meet the test just laid down in regard to the desirable preparation of the historian. The indictment would be correct. No doubt Professor Robinson would be the first to admit that he is but an amiable and humble novice with respect to almost every phase of the preparation of the student of the new history which we have sketched, but he might also retort that if he had his life to live over again he would be adequately prepared. And he could further contend with justice that the character of what he has been able to accomplish with inadequate preparation is the very best proof of the excellent results we may expect from the thoroughly trained students of the future.²⁴

²⁴ For surveys of the sciences auxiliary to the new history see H. E. Barnes (Ed.), *The History and Prospects of the Social Sciences*; E. C. Hayes (Ed.),

V. CONCLUSIONS

The following are the main points which we have attempted to establish in this chapter:

(1) The new history is more than a new conception of the scope and purpose of history. It carries with it the necessity of a far more profound and varied type of preparation for the career of the historian.

(2) It is new in the degree to which the broader view of history has been accepted, in the recognition of the importance of the social sciences in the training of the historian, and in the conquest of history by the genetic point of view derived from the biologists and the evolutionary philosophers.

(3) Up to the present time the exponents of the new history have found it necessary to engage in a campaign of persistent propaganda and education, associated most notably with the names of Lamprecht, Berr, Robinson, Teggart and Marvin. They have now definitely won the victory and can henceforth concentrate their energy upon perfecting the basic concepts and the program of the new history and upon providing for the training of those who will be competent to practise the new history.

(4) The two chief tasks of the new history are to reconstruct as completely as possible the civilizations of the past and to trace the development of the dominant aspects of contemporary culture and of the leading social institutions of to-day. Of these two the latter is by far the more important. The contributions which it may make to the better

Recent Developments in the Social Sciences; W. F. Ogburn and A. A. Goldenweiser (Eds.), *The Social Sciences and Their Interrelations*; H. W. Odum (Ed.), *American Masters of Social Science*; C. E. Merriam and H. E. Barnes (Eds.), *A History of Political Theories: Recent Times*; G. E. G. Catlin, *The Science and Method of Politics*; Columbia University lectures by Boas, Crampton, Wheeler, Robinson, Seager, Beard, Smith, Giddings, Woodworth and Dewey on the social sciences, published individually by the Columbia University Press, 1908.

understanding of our own age is the chief, if not the only, real service of history. Some would add a third task, namely, the formulation of a theory of social causation or a generalized study of social change, but this sort of investigation would appear to fall rather within the field of historical sociology.

(5) No single category of historical events can be regarded as adequate to furnish the skeleton for the organization of the whole story of the historical evolution of human culture, least of all political events. With the advent of cultural and institutional history there must pass into oblivion not only the previous political scaffolding of history, but also the conventional history of nations and the accepted historical chronology.

(6) There is no single cause which determines the course of historical events. The historian must adopt a tentative and empirical attitude toward historical causation and accept a pluralistic outlook.

(7) The naive simplicity and dogmatic certainty of the older history must be abandoned as illusory and misleading. The complexities, uncertainties, confusion and dynamic nature of the problems which face the alert historian of to-day are only the symptoms of the age as a whole—the inevitable result of the historian's discovery that he is living in the twentieth century.

(8) In training the prospective practitioner of the new history it is necessary to abandon at the outset the notion of history as a literary art or a mode of antiquarian recreation. The casual literary artist who exploits historical material is no more of an historian than a painter who depicts an alleged historical scene. History is the science of the reconstruction of past civilizations and of the genesis of present culture. Hence, those who would follow the career of the historian must muster all the types of information involved in recreating the human past and in tracing the development of the human present. This will require a careful

planning of studies from undergraduate days, comparable to the foresight and specialization now found in preparation for medicine and engineering. In short, we can no longer continue to write and teach history without considering the nature and behavior of man.

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